DISPERSED RECREATIONISTS IN THREE ROADED MULTIPLE USE FOREST AREAS OF THE PACIFIC NORTHWEST

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ABSTRACT (1)

Dispersed recreation along forest roads is increasing rapidly in the West. To effectively manage this use and integrate it with other forest activities requires information about the recreation use patterns, preferences, expectations, and opinions of forest visitors. This report summarizes the results of a 3 year study of campers and day users in three areas of Washington and Oregon.

Findings suggest that opportunities these types of areas provide are very different from those in developed campgrounds and primitive backcountry areas. Visitors to dispersed roaded forest areas like the generally unpaved road access, the low level of use, and the freedom to alter campsites to suit their objectives. Furthermore, although this type of recreation is found in conjunction with resource managment activities such as logging and grazing, recreationists do have favorite sites they return to year after year which seem to warrant some protection. Future management programs must consider the value recreationists place on these sites and area attractions and the non-economic as well as economic costs associated with altering these settings.

KEYWORDS: Dispersed motorized recreation, attitudes, preferences, motives, behavior, research, forest management, roads, timber harvest, recreation research.

TABLE OF CONTENTS

INTRODUCTION (1)

Dispersed recreation, whether in roaded or roadless environments is one of the fastest growing forms of outdoor recreation in the United States (Lloyd and Fisher 1972). This type of recreation accounted for two thirds of all recreational use on the National Forests in 1974 (USDA Forest Service 1975) with much of this use occuring on or along the more than 245,000 miles of National Forest roads and trails (Figure 1).

The improvement of the automobile during the early 1900's provided many Americans access to previously hard to reach forest lands. Recreationists on pleasure excursions into the forests often pulled off the road at an appealing location and set up impromptu campsites. They built stone fire rings to keep warm and cook meals, and used water from nearby streams and lakes (Meinecke 1937). Forester's responsible for managing the land often reacted negatively to this dispersed recreational use at unofficial sites; they felt that campfires would result in widespread forest destruction. The lack of sanitary facilities was perceived as a menace to public health (Stahl 1921) (Figure 2).

Developed recreation sites with numerous convenience facilities originally emerged in this country as an attempt to dissuade dispersed recreation (Ellison 1942; Clark and Stankey 1979a). Even recently a study indicated managers felt that benefits of dispersed motorized recreation may be overshadowed by the costs (Downing and Moutsinas 1978; Downing and Clark 1979).

The growth in recreational activities associated with the use of motorized vehicles has been impressive, even with recent gasoline shortages and increases in gasoline prices. Managers and planners of public agencies and some private corporations have recognized the legitimacy and appeal of these activities and are seeking effective ways to better integrate dispersed motorized recreation with other forest uses. As one example, the importance of dispersed recreation to future management of the National Forests is recognized by the recommended program policy direction for the USDA Forest Service under the Resources Planning Act. The policy calls for an increase in the supply of outdoor recreation opportunities and services through programs that emphasize dispersed recreation (Figure 3).

Compared to other recreational opportunities available to the public, (Wilderness, developed campgrounds) relatively little information has been generated concerning dispersed motorized recreation. In 1975 in response to management concerns about how dispersed motorized recreation should be managed, the Wildland Recreation Research Project of the Pacific Northwest Forest and Range Experiment Station began studying dispersed motorized recreation along forest roads on three National Forests in the Pacific Northwest. Dispersed motorized recreation is defined as use which is generally dispersed in nature, but use of motorized vehicles is appropriate for access and for certain types of activities. Initially, inventories were completed to provide detailed geographical, physical, and social characteristics of dispersed recreation sites. Most of these sites were established by users (Hendee et al. 1976a). In addition the nature and amount of dispersed day and overnight use was determined (Hendee et al. 1976b). Findings suggested that: (1) the majority of dispersed recreation occurs at low elevations in user-created campsites next to water,

(2) dispersed recreation use peaks on weekends and holidays, (3) day use is far more prevalent than overnight use, (4) the majority of dispersed recreationists live less than 150 miles from the sites and tend to come from metropolitan areas, (5) most users had been to the area before, (6) weather plays an important role in participation patterns, and (7) dispersed recreationists participated in a wide array of activities including camping, hiking, fishing, hunting, motorbiking, and driving for pleasure.

The purpose of this paper is to describe results of a survey of dispersed recreationists along forest roads in selected drainages in the Pacific Northwest. The study was an attempt to determine the characteristics of dispersed campers and day users, and to identify the patterns, preferences, and attitudes of each of these user types. The objectives which guided the construction of specific survey questions were to determine individual patterns of dispersed recreation use, identify the preferences, satisfactions, and activities associated with dispersed road recreation, and determine how participants behave and feel with regard to some resource management issues that may affect dispersed road recreation policy.

STUDY AREAS (1)

The study took place in three case study areas on National Forest lands in the Pacific Northwest. The areas were chosen because they reflected a range of dispersed road recreation environments in the Pacific Northwest, and similar National Forest areas. Ten selection criteria were used to

insure that the study areas chosen would include the conditions of greatest concern to National Forest management.[1] A total of 28 candidate areas were submitted for possible study. The Greenwater, Taneum-Manastash, and Clackamas areas of the Mt. Baker-Snoqualmie, Wenatchee, and Mt. Hood National Forests most fully met the selection criteria. Figure 4 shows the location of the study areas.

Greenwater Study Area: The Greenwater drainage is located 60 miles southeast of Seattle on the White River Ranger District of the Mount Baker-Snoqualmie National Forest in Western Washington. The main Greenwater road leaves State Highway 12, — a scenic cross mountain route to eastern Washington, -- less than 20 miles from a major entrance to Mount Rainier National Park. The main road ranges in elevation from 1900-2700 feet along the Greenwater River. There are no developed campgrounds or recreation facilities in the drainage, but there are private, state, and USDA Forest Service campgrounds within 20 miles. In much of the area, alternate sections of land are owned by a private timber company. The 78-mile road system has been largely constructed for timber harvest purposes and is maintained under share-cost road maintenance agreements between the USDA

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[1]These criteria were, interest by local managers in participating, intermingled public & private ownership, current or imminent road closures, spectrum of nearby recreation opportunities, proximity to a large metropolitan area, ORV use, forest conditions typical of large categories of National Forest land, different timber harvest methods used, fairly close transportation system to facilitate measuring traffic, and a minimum of unusual recreation attractions.

Figure 4.--Location of the Greenwater, Taneum-Manastash, and Upper-Clackamas study areas.

Forest Service and private timber companies. There are numerous clearcuts throughout the drainage, active logging is in progress at several locations, and additional timber harvest and road construction are planned. To get some idea of how heavy recreation use is in the area, previous research identified over 117 user-defined recreation sites along the 78 miles of road in 1975 (Figure 5).

Taneum-Manastash Study Area: The Taneum-Manastash drainage is on the Ellensburg Ranger District of the Wenatchee National Forest in eastern Washington. The study area lies a few miles south of Interstate 90 and is approximately a 2-hour drive from Seattle. Adjacent and intermingled lands are owned by the State of Washington and a private timber company. In 1976, the area included 47 miles of mainline logging road, and 44 miles of dirt spur roads. The study area covers approximately 70,000 acres and ranges in elevation from 2,000 feet along Taneum Creek to over 6,300 feet at the top of Quartz Mountain. There are several trailheads leading to the adjacent backcountry and four nearby lakes. In the fall, the area is heavily used by deer and elk hunters. The area includes one moderately developed campground with 21 sites and four other locations with from two to five minimally developed sites. The area has clearcut and selective harvest logging units and a long history of sheep and cattle grazing. Several cattle grazing allotments are currently active. Previous research identified 291 user established recreation sites along 95 miles of road in 1975.

Upper-Clackamas Study Area: The Upper-Clackamas study area is on the Clackamas and Estacada Ranger Districts of the Mount Hood National Forest in western Oregon. The area lies adjacent to the main Clackamas river road, a blacktop, two-lane forest highway that serves as a scenic forest loop highway from Portland through the Mount Hood and Willamette National Forests to the town of Detroit in western Oregon. The Clackamas drainage has hundreds of miles of forest roads built primarily for timber harvest. The popular Bagby and Austin Hotsprings are in close proximity to the study area. Three minimally developed campsites (no toilets), three highly developed USDA Forest Service campgrounds, and one privately developed picnic site owned by Portland General Electric Company are within the study area. Because the Clackamas is such a large area, four of its roads were selected for study. They include: 21 miles of the Clackamas highway from Ripplebrook to Squirrel Creek, the Fish Creek road system totaling 80 miles, 70 miles of the Oak Grove-Shellrock Creek road system, and 30 miles of Squirrel Creek road system. A total of 214 user established recreation sites were included in these areas in 1975.

Recreation Site Characteristics: characteristics of the dispersed sites located in the three areas are discussed in detail in Hendee et al. 1976a. For convenience of the reader, Tables 1a & b summarize the major variables related to those sites. Some of these data will be referred to elsewhere in this report. It was at these sites where most of the recreation described in this paper took place.

Table 1a--Distribution of dispersed sites and site density on river bottom, midslope roads, and ridgetop roads in the three study areas

Road	GREENWATER			TANEUM-MANASTASH			UPPER CLACKAMAS			TOTAL - - THREE AREAS		
	Miles of road	No. of sites	Average density si./mi.	Miles of road	No. of sites	Average density si./mi.	Miles of road	No. of sites	Average density si./mi.	Miles of road	No. of sites	Average density si./mi.
River bottom roads	9	64	71	10	96	9.6	48	179	3.7	67	340	5.1
Midslope roads	5	23	4.6	10	57	5.7	32	25	.8	47	105	2.2
Ridgetop & side roads	9	30	3.3	75	138	1.8	121	10	.1	205	177	1.9
Total/Average	23	117	5.1	95	291	3.1	201	214	1.1	319	622	1.9

Table 1b--Dispersed recreation site characteristics in three roaded areas in the Pacific Northwest based on a 1975 Code-A-Site inventory [1/]

Characteristics	Greenwater		Taneum-Manastash		Upper Clackamas		Total	
	No.	Percent	No.	Percent	No.	Percent	No.	Percent
1. Sites by road location:								
Main road	49	(42)	79	(27)	123	(58)	251	(40)
Spur road	65	(55)	153	(52)	25	(12)	243	(39)
Informal road	3	(3)	41	(14)	62	(29)	106	(17)
4-wheel drive road	--	--	20	(7)	3	(1)	23	(4)
2. Site capacity:								
No vehicles, tent only	2	(2)	10	(3)	14	(7)	26	(4)
1 vehicle	12	(10)	6	(3)	58	(27)	76	(13)
2 vehicles	37	(32)	16	(6)	101	(47)	154	(25)
3 vehicles	20	(17)	47	(16)	17	(8)	84	(13)
4 and greater vehicles	46	(39)	212	(72)	24	(11)	282	(45)
3. Visual isolation, No. of other sites in view:								
0	41	(35)	128	(44)	96	(46)	265	(43)
1-3	66	(55)	137	(47)	88	(42)	291	(47)
4-5	9	(8)	23	(8)	18	(9)	50	(8)
6 and greater	1	(1)	3	(1)	7	(3)	11	(2)
4. Dispersal: No. of sites within 1/2 mile:								
0	4	(4)	7	(2)	24	(11)	35	(6)
1-3	43	(38)	108	(37)	26	(12)	177	(29)
4-5	14	(13)	44	(15)	42	(20)	100	(16)
6 and greater	51	(45)	132	(46)	120	(57)	303	(49)
5. Firewood availability:								
Abundant	12	(10)	27	(9)	52	(24)	91	(15)
Available	104	(89)	220	(75)	116	(55)	440	(70)
Scarce	0	(0)	45	(15)	40	(19)	85	(14)
None	1	--	1	--	5	(2)	7	(1)
6. Water availability:								
Adjacent to site	53	(45)	111	(38)	145	(70)	309	(50)
Available nearby	22	(19)	170	(58)	18	(8)	210	(34)
No water available	42	(36)	12	(4)	47	(22)	101	(16)
7. Toilets:								
Accessible to site	0	(0)	76	(35)	6	(3)	82	(13)
Not accessible to site	117	(100)	217	(65)	205	(97)	542	(87)
8. Facilities at site:								
None	155	(99)	207	(75)	211	(98)	573	(89)
Sign	2	(2)	49	(18)	0	(0)	51	(9)
Garbage can	0	(0)	2	--	2	--	6	--
Table	0	(0)	11	(4)	1	--	12	(2)
9. Estimated environmental impact:								
Extreme	2	(2)	0	(0)	8	(4)	10	(2)
Heavy	11	(9)	47	(16)	13	(6)	71	(11)
Moderate	36	(31)	146	(50)	76	(35)	258	(41)
Light	68	(58)	100	(34)	117	(55)	295	(46)
10. Estimated frequency of site use:								
Heavy	7	(6)	0	(0)	10	(5)	17	(3)
Frequent	26	(22)	35	(12)	14	(6)	75	(12)
Moderate	18	(15)	62	(21)	40	(19)	120	(19)
Slight	16	(14)	98	(34)	53	(25)	167	(27)
Infrequent	50	(43)	97	(33)	96	(45)	243	(39)
11. Recorded frequency of use (1975):								
Heavy (25-30 nights)	2	(2)	13	(4)	6	(3)	21	(4)
Frequent (19-24 nights)	1	--	10	(3)	9	(4)	20	(3)
Moderate (13-18 nights)	7	(6)	22	(8)	23	(11)	52	(8)
Slight (7-12 nights)	22	(19)	42	(14)	40	(19)	104	(17)
Infrequent (1-6 nights)	24	(21)	85	(30)	73	(34)	182	(29)
Unused	61	(52)	121	(41)	62	(29)	244	(39)

[1/] All totals for study area subsections add to approximately 117 for Greenwater, 293 for Taneum-Manastash, and 214 for the Upper Clackamas. Totals have been omitted to save space. All percentages add to 100 down the page with the exceptions of number 8, Facilities at site, which does not have mutually exclusive categories. Table summarizes data described in Hendee et at. 1976a.

METHOD (1)

To satisfy the objectives of the study, a two-part instrument composed of a questionnaire and a brief interview schedule was developed. The brief interview, conducted prior to giving questionnaires to respondents was in part an observation form and sought information related to the purpose of the trip, group composition, and whether the trip was for the day or overnight.

The nine page questionnaire consisted of 88 separate questions and took about 1/2 hour to complete. The survey was pre-tested for clarity and ability to elicit responses as intended and revised as necessary .

CONSTRUCTION OF THE SAMPLING FRAME (2)

In earlier research (Hendee et al. 1976b), apparent differences emerged between campers and day users in the three areas. Day users appeared to be oriented towards specific activities such as motorcycling and fishing and were scattered over large portions of the study area. Campers, however, seemed to spend much of their time in camp doing camp chores and just relaxing, consequently spending less time participating in specific recreation activities. Due to the logistical problems of sampling highly mobile day users, and the importance of having a representative sample of both user types, overnight campers and day users were treated as distinct populations and sampled separately. This technique resulted in two samples reflecting the two user groups, but also created some constraints in analyzing the combined data, which will be discussed later (Figure 6).

Sampling Period (3)

The sampling period extended from July 1st to November 16, 1976 and was separated into distinct summer (July 1 - September 5) and fall (September - November 16) seasons. During the summer season questionnaires were distributed Thursdays through Mondays; during the fall season questionnaires were distributed Thursday through Monday in the Taneum area, but they were only handed out during Saturdays and Sundays in the Greenwater Clackamas areas which have low weekday visitation after Labor Day.

SELECTION OF SAMPLED PARTIES AND PARTY REPRESENTATIVES (2)

Beginning on July 1st the field assistants distributed questionnaires to campers at their campsites in each of the three study areas. The next day, they handed out the survey to day users as they entered the areas. On the third day campers were again sampled. This alternate day strategy was followed for the remainder of the sampling period. The pattern adopted was designed to nullify any biases that might have resulted by such seasonal factors as rainfall and snowpack.

Day Users (3)

A day use party was defined as one or more people travelling into the area together for a stay that did not involve overnight camping. Questionnaires were distributed to day users every other sampling day by stopping every other vehicle at fire prevention stations at the entrance to the study areas. Distribution hours alternated between morning (8 am to 1 pm) and afternoon (1 pm to 6 pm) every other day so as to cover the primary

period of entry. Heavy traffic along the road sometimes made it impossible for the field assistants to interview every other day use party. When this was the case, some parties were waved on to reduce traffic congestion. The percent of parties waved on did not exceed 20 percent for any of the areas. It was presumed that because day users arrived at the study area in random order, the failure to contact these users would not have a significant effect upon the outcome of the survey. After a selected day party had been stopped, the adult driver and passenger (where available) were asked if they would like to participate in the survey. Females, often not represented in recreation surveys were purposely sought out. Once the parties agreed to participate, the pre-questionnaire interview was conducted and the potential respondents were instructed about how to complete and return the survey. Less than 1 percent of the day users contacted refused to participate in the interview (Figure 7).

Campers (3)

Sampling of campers presented a difficult problem because of the size of the areas. This problem was overcome by creating an index that facilitated the division of the study areas into equivalent sampling zones of manageable size within which the field assistants were able to sample 100 percent of the camping parties. During the summer of 1975, all campsites were inventoried using the Code-A-Site system (Hendee et al. 1976a) and data recorded on their physical characteristics and the number of nights that each site was occupied (Table 1b). Based on this use data, it was possible to construct a standardized frequency of use index. For example, the Greenwater study area contains 117 campsites and it was possible to sample only about one half of the study area during one day due to personnel

restrictions and the distance between sites. By dividing the study area into two sampling zones in such a way that each zone was functionally equivalent to 50 percent of the total use of the study area, any group entering the study area to camp overnight should have had a 50 percent chance of being selected as part of the sample (Figure 8).

The sampling zones in each of the study areas were sampled sequentially (beginning with a random start) on the alternate days when overnight campers were being sampled. On each of these days, the field assistants attempted to contact all camping parties present in the selected sampling zones. Campers arriving after the field assistant had visited their campsites on his patrol route were included in the survey only if they remained in the area long enough to be included in the next round of sampling. The field assistants varied their patrol routes by starting at opposite ends of the sampling zone each time they distributed questionnaires to avoid any bias caused by a constant patrol route. The core sampling times were from 8 to 10 a.m. and from 4 to 8 p.m. It was not practical to sample during mid-day as many campers left their sites to participate in off-site activities.

Upon approaching an occupied campsite, the uniformed researchers explained the nature and purpose of the study and asked if the head of the party (selected by the party) and a female/male companion (if both were present) would like to participate. (A party was defined as all people camping together at a site.) If they agreed, he completed the pre-questionnaire interview, explained how to complete and return the questionnaire, and thanked the party for their cooperation. Less than 1 percent of the camping parties refused to participate.

USER RESPONSE TO THE SURVEY (2)

Methods of Returning Questionnaire (3)

Potential respondents were instructed to return the questionnaire in one of three ways. They could complete it while they were still within the study area and return it at the fire prevention check station as they left or give it to the field assistant at a mutually agreed upon time. These two procedures were encouraged to help increase the response rate. A third option was to fill the questionnaire out after leaving the site and return it in a government franked envelope included with each questionnaire. The majority of questionnaires were returned by the latter method.

Follow Up Procedures (3)

At the time potential respondents were interviewed they were asked to write their name and address on a government post card which contained a brief printed message reminding the respondents that we had not received their questionnaire. At the end of each week in the field, the post cards were given to clerical staff and questionnaire numbers and the name and address of the respondent were sequentially entered on lists by study area. If at the end of one week from the date of the interview, we had not received the questionnaire, the potential respondent's self-completed post card was mailed.

If at the end of the second week, we had still not received a completed questionnaire, a second identical questionnaire was sent to the potential respondent with a personalized letter from the field assistant. At the end of the third week a final post card reminder was sent. If no questionnaire was forthcoming, the individuals were classified as non-respondents and no further effort was made to contact them.

Response Rate (3)

Altogether, 3435 questionnaires were distributed to day users and campers in the three areas. Two thousand one hundred and eighty (63 percent) were returned. The response rate was slightly higher for campers (68 percent) than day users (60 percent) and differed somewhat among the areas (Greenwater = 60 percent; Taneum-Manastash = 75 percent; Clackamas = 59 percent). The discrepancy in response rate between areas was related to work loads stemming from conditions within study areas. For example, the Taneum-Manastash (where the highest response rates were obtained) had low use and permitted field personnel to spend more time administering the interview and revisiting campsites to pick up the questionnaire. Conversely the large amount of weekend traffic along the main Clackamas highway tended to result in "rushed" interviews.

Table 2. Number of respondents and Percent of Total Questionnaires Distributed by Study Area and Type of User

Type of User	Study Area[1/2/] Greenwater		Taneum-Manastash		Clackamas		Total		
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	
Day User	375	(58)	268	(70)	639	(58)	1282	(60)	
Camper	284	(63)	419	(79)	195	(60)	898	(68)	
									$X^2=221.4$
Total	659	(60)	687	(75)	834	(59)	2180	(63)	$p<0.001$

1/ number of respondents
2/ response rate

Comparison of Respondents and Non-Respondents (3)

Because each potential respondent was briefly interviewed on site before they were given a questionnaire, we have some information about persons who elected not to respond. In the case of day users, respondents tended to be more likely to have visited the study area previously, and were slightly more likely to have been classified as senior-citizens. No statistically significant differences between respondents and non-respondents were found for size of city of residence, weekday versus weekend visitors, and party size.

For the camping parties, respondents were more likely to have been contacted on a weekday, to be senior citizens, to have stayed in the study area a longer period of time (thereby increasing followup contacts), and to have camped in a recreational vehicle, as opposed to a tent. Responding campers were also more likely to have been with a smaller than average (less than 6 persons) group. No statistically significant relationship was observed between the size of the respondents' city of residence and their tendency to respond. Most of the statistically significant differences were small and none of the differences observed is believed to have any major substantive importance for the findings described in this paper.

BACKGROUND CHARACTERISTICS OF THE SAMPLE (2)

An understanding of some of the important characteristics of the study respondents may help the reader interpret the data presented in this paper. A brief synopsis of the background attributes of respondents is presented here with a few comparisons made (where data are available) between these recreationists and respondents in other recreation studies.

1. Residence: The majority of visitors to the three study areas drove about two hours or less to reach their destinations, coming from nearby metropolitan areas -- Seattle and vicinity for the Greenwater and Taneum-Manastash areas, and Portland and vicinity for the Clackamas area. In this regard, dispersed road-oriented users are probably similar to other recreationists.

2. Age: The average age of respondents was about 38 years for both campers and day users. No important differences were noted between areas. These ages are not indicative, however, of the users in the areas because the sampling strategy excluded persons less than 18 years old and favored heads of party who might be expected to be older. These data compare reasonably well with findings in several Wilderness areas during the 1970's (Hendee et al. 1978). Wilderness users tend on the average to be slightly younger than these users of dispersed roaded areas, but all age groups are well represented in both types of areas.

3. Education: Respondents in this study had an average length of education of about 13 years, although 50% more day users reported having 13-16 years of schooling than campers. In comparison to studies of Wilderness users (Hendee et al. 1978), a smaller percentage of respondents in this study had 5 or more years of college. Day users more closely resemble Wilderness users in this regard than do campers.

4. Income: Average reported income was about $16,000 for both campers and day users, and about 80 percent of the sample reported total annual family incomes of greater than $12,000. This average is somewhat understated because the questionnaire format did not allow for persons earning more than $24,000 to specify their exact income. As a comparison, average family income reported by the Bureau of the Census for this period was $13,850 for Oregon and $14,960 for Washington. So this sample appears somewhat more affluent than would be a sample of the general public, a finding similar to studies of other recreationists including Wilderness users.

5. Sex: One intention of the sample design was to obtain about an equal number of males and females in the survey. For campers this goal was closely met (53 percent males), but for day users a much higher proportion of males were included in the survey (65 percent). The differences may be due to the higher proportion of men encountered as day users during both summer and fall seasons in these areas.

6. Occupation: Professional/technical, craftsmen, kindred workers, and housewives accounted for almost half of the respondents. An additional quarter of the sample were in the managerial/administrative, clerical, and retired categories, with the others widely spread among a variety of other occupations. More day users than campers were professional/technical workers and were similar to Wilderness users in this regard (Hendee et al. 1978). Few farm workers visited these recreation areas even though the Greenwater and Taneum-Manastash areas are located near agricultural regions.

With respect to these background characteristics, the sample is diverse in composition. As Shafer (1969) indicates, there are no suitable stereotypes or mythical averages. Day users are similar to campers in some ways, yet different in others. Several of the differences noted seem to indicate that, as far as background variables are concerned, day users are more closely related to Wilderness users than are campers in the study. We will return to this issue when discussing other data.

RESULTS AND DISCUSSION (1)

This report summarizes the responses from 2180 persons in the three study areas. Discussion of the results is organized under four sections covering patterns, preferences, perceptions of management problems, and attitudes about specific forest management activities.

As indicated previously, day users and campers were sampled separately. While the data from each sample reflect the views of that type of user, the samples cannot be combined without knowing the relative proportion of day users and campers in dispersed recreation areas. To avoid this complexity the samples have not been combined in the following analyses, and responses are reported separately for day users and campers on all issues. To facilitate comparisons, all tables present the data as percents; this effectively standardizes the two samples, which were of unequal size (Reynolds 1977). However the reported statistics have been calculated from the actual cell frequencies for each table.

Statistical tests (Chi-square, difference-of-proportions) were performed to determine the difference in responses between the day users and campers. Where no significant differences were apparent, it can be assumed that these data reflect the general view of all dispersed users. Where statistical differences were significant, a measure of association (gamma) was used to indicate the degree to which campers and day users differed in opinion. For issues in which this difference is large (as measured by gamma), it will be important to consider the views of each type of user when attempting to generalize these results to reflect dispersed recreationists in general.

PATTERNS OF DISPERSED RECREATION ALONG FOREST ROADS (2)

Respondents' history of use in the area (3)

Results indicate most visitors had been coming to this area for many years; the average user visited the study area more than seven years before the interview. The Taneum-Manastash users' average of more than nine years was significantly higher than for the other areas, perhaps due to the relatively good hunting in this area which encourages some hunters to return year after year.

People included in the study not only have been coming to the study area for a long time, but they also have visited the area on many occasions (Table 3). Nearly half had been to the area more than 11 times in the past. The Clackamas appeared to be somewhat of an exception in that more visitors had not been in the area before. This may be due to the main state highway which goes through the area resulting in more "pass-through" tourists who are unlikely to return in the future. The Taneum-Manastash and Greenwater areas have a much more closed transportation system which limits that kind of user.

Table 3.--Number of previous trips to study area where contacted

	Number of Previous Trips						
	Never	Once	2-4	5-10	11 and greater	Total	
	Percent						
Campers (N=888)	12	8	15	19	46	100	X^2=36.06
Day Users (N=1239)	13	8	11	12	56	100	p=0.001
							γ=0.11

How they learned about the areas (3)

Formal information about recreation opportunities in dispersed motorized areas is not as readily available as it is for developed campgrounds or Wilderness areas where agency maps and directories, as well as popular publications are common. With this lack of information through agencies, how do people learn about these areas?

Table 3a indicates that informal personal contacts, most often family and friends, are the most important source of information about opportunities for recreation in dispersed roaded areas. Fazio (1979) found similar results in a study of Wilderness users even though more information is available about those opportunities.

Of significant importance, was the large number of people who found the areas while exploring. Driving the roads in areas like the Taneum-Manastash, Clackamas, and Greenwater is a growing recreation activity. In these areas alone, more than 300 miles of roads of various standards are open for public travel (Figure 9).

Table 3a.--How users first learned about the study area in which they were contacted[1]

How Learned About Area	Campers (N=879)	Day Users (N=1218)
	Percent[2]	
Friends or acquaintances	46	40
While exploring the area	32	34
Family	21	23
While working in the area	6	6
Publication, map, or brochure	3	6
Organization or club	4	3
Newspaper, magazine, or mass media	*	2
Land management agency representative or official	*	2
Totals	112	116
	$X^2=48.00$	
	$p \leq 0.001$	

[1]Totals add to more than 100% because some respondents gave more than one choice.

[2] * Indicates less than 1% of responses.

Although relatively little information is presently available from agencies about dispersed roaded recreation opportunities, some managers have begun to prepare such material for distribution to the public. How more readily available information will affect use of areas like those studied cannot be determined at the present time. However, if the traditional nature of use and predominant, secondary sources of information holds true, it may not have any direct effect. But those who do use such information may pass it on to others with a resulting multiplier effect. This could be particularly important where accurate information needs to be communicated.
As Potter et al. (1973) point out in a study of pheasant hunters, informal communication may result in erroneous or misleading messages being passed around (Figure 10).

Proportion of Times Users Camp (3)

Nearly 90 percent of the respondents identified as campers in the survey usually or always camp compared to slightly more than 30 percent of the day users. But most day users camp at least sometimes--only 15 percent said they never camp when they go to dispersed roaded areas. Whether the difference in camping patterns between these two groups is reflected in their attitudes and preferences is explored later in this paper.

Table 4.--Proportion of time respondents camp when visiting dispersed road recreation areas.[1]

Type of Users	Never Camp	Sometimes Camp	Camp Half Time	Usually Camp	Always Camp	Total
	Percent					
Campers						
N=877	*	9	4	39	48	100
						$X^2=679.00$
						p=0.001
Day Users						
N=1222	16	37	13	24	9	100
						$\gamma = -0.77$

[1] *Indicates less than 1 percent.

Favorite Sites (3)

Not only did most recreationists return frequently to the same area, but they often return to favorite spots (85 percent of campers and 74 percent of day users)(Table 5). This was true in all three areas for both campers and day users, although campers were more likely to return to favorite locations than were day users. Favorite locations may have certain characteristics that have made them attractive. Consequently, if planning and management direction is to facilitate dispersed recreation in areas like those in this study, it is important to identify which type of sites have particular appeal for recreationists. Code-A-Site inventories provide the information available for use in planning management programs (Hendee et al. 1976a). With information such as that summarized in Table 1 and discussed in later sections of this paper, decisions can be more easily made about future management of sites used by recreationists (Figure 11).

Table 5. When you come to this area, do you have favorite spots to which you return?

	Favorite Spots			
Type of User	Yes	No	Total	
Campers (N=847)	85	15	100	$X^2=33.38$ $p\leq 0.001$
Day Users (N=1160)	74	26	100	$\gamma=0.32$

Style of Camping (3)

Dispersed recreation areas are generally characterized by their lack of recreation facilities (Table 1). In these three areas, for example, most camping parties compensate for the lack of facilities by bringing their own equipment. Table 6 shows that many bring in one or more recreation vehicles, with pickup campers and trailers the most popular. These recreation vehicles (RV's) provide users with many home-like comforts. About a third of the campers were staying in trailers, another third in pickup campers, a fourth in tents, and the remainder were in motor homes, vans, or out in the open. The high use of a wide range of types of RV's represents a large investment for users and is a measure of their commitment to this type of recreation. What effect increasing gas costs will have on the use of this type of equipment in these areas cannot be ascertained, although trends towards smaller rigs and more frequent trips to closer areas have been noted (Figure 12).

Table 6. Reported Camping Style of Respondents

Type of User	Trailers	Pickup Campers	Tents	Motor Homes	In the Open	Vans	Total
			Percent				
Campers (N=819)	22	33	21	5	4	5	100

Number of Vehicles at Sites (3)

Motor vehicles play a dual role in dispersed roaded areas. They serve as a means to get to preferred sites, and they also are a necessary part of many recreation activities. About half of the camping parties brought two or more vehicles to the study areas. Overnight users often drove passenger sedans or station wagons in addition to the RV's used for sleeping. They used these vehicles for such purposes as driving out of the area to stores, to fishing areas within the study areas, and to places where they could gather forest products like mushrooms, berries, and firewood (Figure 13).

Frequently, especially in the Taneum-Manastash and Greenwater areas, one or more motorcycles or jeeps were brought along in tow or in the backs of pickups to be used for recreation purposes.

Party Size (3)

Generally, twice as many people were found in camping parties (about 6) than in day-use groups (about 3). This is consistent with the finding that camping parties generally had multiple vehicles more often than day users. Often, camping parties were composed of multiple-family groups camping at the same site. As is the case for both developed car campers and Wilderness users, opportunities for intra-party socialization are the rule (Figure 14).

Length of Stay (Campers) (3)

There was a significant difference in the length of stay by study area (Table 7). The mean length of stay for Greenwater respondents was 2.6 nights, Clackamas 3.8, and Taneum-Manastash 5.2. Earlier observations led us to believe that the longer length of stay exhibited by Taneum-Manastash campers might be related to this area's hunting popularity. Elk and deer hunters were observed camping out for periods as long as two weeks, and we believed this might account for the longer average stay at Taneum-Manastash. To test this notion, we divided the responses of Taneum-Manastash campers into two groups: The summer group (July 1 - October 15) and the hunter group (October 16 - November 14) during deer and elk season. The mean expected length of stay was 3.0 nights for the summer campers and 7.8 for the hunters, supporting the observation that the longer length of stay at Taneum-Manastash can be attributed to the influence of hunters.

Table 7.--Mean number of nights campers expected to stay on site in each study area.

Study Area	Mean Number of Nights (N=899)	
Greenwater	2.6	
Taneum	5.2	(3.0 summer; 7.8 hunting) N=225 N=194
Clackamas	3.8	
Total all three areas	4.1	

Participation in Specific Activities (3)

During earlier research in these areas, we observed a wide range of activities in each area. We asked respondents in the survey to indicate activities while visiting the area. The results shown in Table 8 indicate that all three areas serve a variety of purposes; each activity listed in the questionnaire (there were 39) had some participants in each area (Figure 15).

But in each of the areas, some activities were more common than in the other areas. Some of the more obvious differences shown in Table 8 are described here. For each of the areas, the activities for which that area clearly received the greatest proportion of participants are listed:

Greenwater:

Biking, target shooting, day hiking (day users), berry picking, collecting specimens, camp chores (campers), visiting friends (campers), outdoor games (campers).

Taneum-Manastash:

Jeeping, snowmobiling, hunting, photography (day users), horseback riding, snowshoeing, getting food (day users), getting Christmas trees (day users), visiting other parties (campers

Table 8 . Participation in Recreation Activities

Activity	Greenwater		Taneum-Manashtash		Clackamas	
	Camper (284)	Day (375)	Camper (419)	Day (268)	Camper (195)	Day (639)
	Percent					
Driving	44	56	46	57	50	73
Biking	57	27	36	18	20	9
Jeeping	24	28	36	33	12	10
Snowmobiling	10	7	12	15	4	2
Fishing	81	71	75	71	86	85
Hunting	39	49	70	63	43	25
Boating/canoe	15	18	17	20	32	52
Raft/river floating	13	12	5	13	27	16
Target shooting	30	32	28	24	22	13
Mountain climbing	14	19	14	19	21	40
Horseback riding	12	10	17	20	13	7
Day hike	35	49	38	43	47	41
Backpacking	9	24	13	25	22	19
Swimming	31	28	20	24	53	58
Nature walk	53	52	49	48	61	68
Photography	26	28	30	33	37	27
Bicycling	13	8	6	6	11	11
Snowshoeing	1	5	4	12	3	4
Snowplay	24	16	11	21	22	36
X-Country Ski	2	5	2	8	5	7
Berry picking	46	57	32	46	39	34
Wood cutting	22	30	21	41	23	26
Get food	15	29	19	31	22	13
Xmas tree	8	13	12	24	13	11
Collect specimens	29	26	26	22	20	17
Rock collect	30	24	23	27	33	20
Walking	84	69	71	60	82	80
Camp chores	85	68	79	70	79	77
Visit friends	76	57	71	59	66	70
Visit other parties	20	21	28	18	22	15
View scenery	74	65	72	64	73	79
Enjoy music	33	21	19	15	41	40
Drink alcohol beverage	35	24	28	25	34	16
Relaxing	83	70	75	61	84	80
Outdoor games	50	30	30	27	46	48
Art work	6	4	5	5	11	7
Sunbathing	44	25	25	20	46	27
Reading	48	28	33	22	50	32
Playing cards	48	26	38	24	55	24

Clackamas:

Driving, fishing, boating/canoeing, raft/river floating, mountain climbing, day hiking (campers), swimming, nature walks, photography (campers), snowplay (day users), getting food (campers), walking (day users), visiting friends (day users), enjoying music, relaxing, outdoor games (day users), art work (campers), sunbathing, reading, playing cards.

As Table 8 shows, all activities had participants in each of the areas. But some interesting patterns are evident in these lists which document the notion that each area (while similar to the others in terms of the extensiveness of activities) is different when intensity of participation is considered.

The Clackamas area had a higher frequency of participation in many more activities than either of the other areas--indicating that users come there for a wider variety of activities as compared to the other areas. This might be expected because of the greater range of available opportunities--such as campgrounds and a State highway--than in the Greenwater and Taneum-Manastash. The Clackamas seems to cater to a more general-purpose user than do the other study areas.

Some of the activities listed for each of the areas are a function of available physical resources which clearly distinguish one area from another. Well-known bike trails, berries, and gemstones in the Greenwater;

jeep routes, prime hunting, easy access to Christmas trees and snow in the Taneum-Manastash; and main roads for driving, and an accessible river with a reasonably good fish population in the Clackamas, all facilitate certain activities more so in one place than another. Indeed, as Burch (1964) indicated, people choose places which facilitate specific activities.

Other activities seem to be more related to the type of user than features of the area per se. Visiting friends and other parties, outdoor games, photography, horseback riding, nature walks, enjoying music, relaxing, art work, sunbathing, reading, and playing cards are possible in all areas, but each tends to appear more in one area than the others.

The implications of these data seem clear. In areas such as those studied here, managers should recognize and protect features which offer different opportunities compared to other areas. But, at the same time, one must avoid getting caught in the trap of stereotyping areas as being good for one activity and not another. At least in the areas studied, many purposes are served for the visitors. Diversity is the key, and users seem to match their desired style to area facilities with little difficulty and few conflicts with other users.

RECREATION SETTING PREFERENCES (2)

Many studies of outdoor recreationists focus on the location preferences of the respondent. Although preferences for recreation settings are often an imperfect indicator of subsequent behavior (Clark 1977, Webb 1966, Heberlein 1977) they do give some indication of the motives behind certain recreation choices or satisfactions and values sought. Planners and managers can benefit from knowledge of how and why recreationists make choices about where to go and what to do when they arrive at a recreation site. Because management actions may facilitate or hinder their choices, preference data can help us determine the range of public values (Figure 16).

The Recreation Opportunity Spectrum (ROS) framework is based on the assumption that recreationists seeking certain recreation experiences choose settings in keeping with their desires (Clark and Stankey 1979b; Brown et al. 1978). Research on developed car campers and Wilderness users has documented that these two groups generally are at polar extremes from one another when it comes to preferences for recreation places. Users of developed, intensively used campgrounds tend to prefer socializing with many people outside of their own party; they desire many comforts and facilities in the campgrounds they frequent; and they are generally very tolerant of highly modified environments (Hendee and Campbell 1969; Clark et al. 1971). Wilderness users, on the other hand, generally prefer solitude wherein they have only minimal contacts with people outside their party, they desire areas without the trappings of modern civilization, and they prefer pristine environments where only natural conditions exist (Hendee et al. 1978).

Clearly, the developed car campers and Wilderness users have made choices which put them at the two ends of the ROS. But what about the recreationists under study here? Have they chosen the case study areas because they have some special appeal, as is indicated by their repeat use and length of stay, or is it because they cannot find places which are more in keeping with their desires? In this section we try to answer these questions.

Settings Preferred by Users (3)

Results from this study indicate that there is a clear relationship between preferences and visitation to particular kinds of recreation settings. More than half of the campers preferred environments much like the ones they were in when the questionnaire was given to them (Table 9). Over 80 percent of the campers preferred either minimally developed campgrounds or the dispersed motorized type. Obviously, most of these campers prefer motorized access, but low levels of development.

Day users, although indicating roughly the same order of preference, gave very different responses--only one-third percent gave dispersed roaded areas as the first preference. About equal numbers of day users preferred minimally developed and dispersed roaded areas followed by backcountry or Wilderness. A small proportion indicated their first preference as highly developed campgrounds.

Table 9.--Users' first preference for types of recreation settings.

Type of Setting Preferred	Campers (N=810)	Day Users (N=1135)	
	percent		
Highly Developed Campgrounds[1]	4	11	
Minimally Developed Campgrounds[2]	25	34	
Dispersed Roaded Areas[3]	62	34	
Roadless Backcountry or Wilderness Areas[4]	9	21	$X^2=175.49$
Totals	100	100	$p\leq 0.001$
			$\gamma=-0.13$

[1]Highly developed means campgrounds or picnic areas with many facilities such as paved roads, flush toilets, water faucets, tables, permanent fireplaces, and sometimes electricity and/or showers.

[2]Minimally developed means campgrounds or picnic areas with only rustic facilities such as outhouses, tables, fireplaces, and water at a few central locations.

[3]Dispersed road means recreation areas where informal campsites have been established but there are no official facilities.

[4]Backcountry, roadless or Wilderness means areas where the only access is by hiking or horseback.

Although some significant differences were noted between areas, these were largely a matter of degree rather than order. In all areas, the dispersed roaded recreation received a higher percent of respondents' preferring it than minimally developed sites which, in turn, was larger than backcountry. Developed recreation sites found the least favor in all areas and for both overnight and day users.

Campers seem to come to dispersed motorized areas because they prefer them. But, day users show an equal or stronger preference for other types of areas, which may explain why they use the areas during the day for a variety of recreational activities, but do not camp there as frequently.

Number of Trips to Different Settings (3)

As would be expected, based on the preference described above, data in Table 10 show that the people in the study visit dispersed motorized settings more frequently than the other types. More than 90 percent of the campers and 80 percent of the day users had visited this type of setting, with more than a third going 6 or more times. Only a small proportion of the campers and day users did not visit dispersed road recreation settings during the year prior to responding to this questionnaire.

Highly developed campgrounds and roadless Wilderness/backcountry settings are clearly much less popular with recreationists visiting the study areas than minimally developed campgrounds and dispersed motorized recreation areas. About half or more reported that they did not use these other areas at all; most of the remainder visited them only once or twice. An exception (but consistent with earlier data) is that more day users reported going to roadless areas,and visited these areas more often, than did campers.

Table 10.--Number of trips made by respondents to four types of recreation settings during the previous year they were interviewed.

Type of Recreation Setting	Number of Trips						
	None	1-2	3-5	6-8	9+	Total	
	Percent						
Highly Developed Campgrounds							
Campers (N=800)	50	33	12	3	2	100	X^2=2.47
Day Users (N=1115)	50	32	12	3	3	100	p=0.65 N.S.
Minimally Developed Campgrounds							
Campers (N=795)	20	37	25	9	9	100	X^2=3.15
Day Users (N=1140)	18	35	28	10	9	100	p=0.53 N.S.
Dispersed Road Recreation Areas							
Campers (N=831)	7	22	31	16	24	100	X^2=53.67
Day Users (N=1135)	16	27	23	12	22	100	$p \leq 0.001$ γ=0.17
Roadless Backcountry or Wilderness Areas							
Campers (N=759)	64	18	10	4	4	100	X^2=66.90
Day Users (N=1076)	45	25	13	7	10	100	$p \leq 0.001$ γ=0.31

Not only was there a strong preference stated for the dispersed type of areas by the people who were recreating there, but the results also indicate that these users tend to use such areas more frequently than other types (the relationship between preference and actual participation was significant and strong). But, although a positive relationship exists between preferences and use patterns, they did use other types of recreation settings as well, once again documenting the uncertain relationship between stated preference and actual behavior. Many factors probably account for this discrepancy between preferences and behavior--perceived availability of alternatives, seasonal variation in access to preferred places, influence of family or friends, purpose of the trip, or the desire for diversity. As Shafer (1969) points out, there is no such thing as an average recreationist. In this case, variety may truly represent the spice of life for many of these people.

Childhood Recreation Participation (3)

In order to gain some insight into the question of how recreationists learn about dispersed recreation, respondents were asked to indicate which type of forest recreation they participated in most often as children. Data displayed in Table 11 indicate that of those who camped as children, most engaged in the more dispersed, undeveloped recreation types; about 10% of users visited highly developed campgrounds most often as children. It must be remembered, however, that the latter type of setting may have been less available more than 20 years ago than at present. But the results do indicate that the majority of our sample camped as children in similar places to where they tend to camp now. (A statistically significant relationship

was found between childhood participation and present use patterns.) Similar findings have been documented by Yoesting and Burkhead (1973) (Figure 17).

Table 11.—Type of recreation settings visited most by respondents as children[1]

Type of Recreation Setting	Campers (N=899)	Day Users (N=1262)	
	--------Percent--------		
Highly Developed Campgrounds	10	9	
Minimally Developed Campgrounds	27	31	
Dispersed Road Areas	31	28	
Roadless Backcountry or Wilderness	19	20	$X^2=6.94$
Didn't Camp as a Child	29	26	
Totals	116	114	p=0.14 N.S.

[1]Percentages add to more than 100% because some respondents checked more than one answer category.

Future Use of Recreation Settings (3)

What people say about their anticipated future behavior may be a good indicator of their like or dislike (preference and/or commitment) for a particular type of recreation setting (Heberlein 1977). It is significant that the majority of campers and day users indicate that their future use of highly developed, minimally developed, and backcountry areas will remain the same or decrease (Table 12). On the other hand, a majority of the campers and half of the day users say that their use of dispersed roaded (but undeveloped) areas will increase. These data support the preferences described earlier and suggest that both day users and campers are committed to dispersed, roaded types of recreation opportunities and will increasingly seek to use such areas more often in the future. In fact, Forest Service recreation use data supports this finding.

Table 12. Expected Future Use of Different Recreation Environments

Type of Area	Increase	Remain the same	Decrease	Total	
		Percent			
Highly Developed					
Campers (783)	15	62	23	100	$X^2=9.80$
Day Users (1108)	19	61	20	100	$p \leq 0.001$ $\gamma=-0.13$
Minimally Developed					
Campers (806)	32	60	8	100	$X^2=159.1$
Day Users (1160)	37	56	7	100	$p \leq 0.001$ $\gamma=-0.08$
Dispersed Road					
Campers (843)	62	34	4	100	$X^2=183.$
Day Users (1132)	50	43	7	100	$p \leq 0.001$ $\gamma=0.24$
Back Country					
Campers (761)	35	52	13	100	$X^2=14.9$
Day Users (1085)	45	44	11	100	$p \leq 0.001$ $\gamma=-0.14$

Reasons for Liking and Disliking Different Recreation Settings (3)

The format of the survey instrument permitted each respondent to give up to three reasons for liking and disliking each of these four types of recreation settings. Using content analysis procedures developed for public involvement (Clark et al. 1976), the large number of differently worded, yet similar, responses was reduced to 29 basic reasons for liking each type of setting and 28 reasons for disliking each type. The two lists of reasons are displayed in Tables 13 and 14.

These two tables are essentially positive and negative expressions of the same values. For example in Table 13, 15 percent of campers like dispersed road recreation areas because they perceive such areas as not having too many people. In Table 14, less than 1 percent of the respondents reported disliking these areas because of too many people. Together, these two tables provide an informative picture of the reasons this group of recreationists prefer less developed settings. The reasons given for each type of opportunity setting are described below (Figure 18).

Highly developed campgrounds (4)

Both campers and day users gave only a few reasons for liking highly developed campgrounds (Table 13). A small minority of the sample liked the facilities associated with such areas and the fact that they are readily available. Negative comments, however, far outweighed positive ones. Highly developed campgrounds were viewed as being too crowded, too developed, too noisy, and too expensive. In contrast, previous studies of campground users found just the opposite; people choosing to camp there like them for some of the same reasons dispersed users dislike them (Clark et al. 1971).

Table 13. Reasons why dispersed road recreationists like highly developed campgrounds, dispersed road recreation areas, and roadless, backcountry or wilderness areas. 1/

Reason for Liking	Highly Developed Campgrounds N=898 Camp	Highly Developed Campgrounds N=1282 Day	Minimally Developed Campgrounds N=898 Camp	Minimally Developed Campgrounds N=1282 Day	Dispersed Road Recreation Areas N=898 Camp	Dispersed Road Recreation Areas N=1282 Day	Roadless, Backcountry or Wilderness N=898 Camp	Roadless, Backcountry or Wilderness N=1282 Day
	-percent-							
Like because not too many people	*	*	16	16	25	18	7	8
Like because developed	8	11	14	14	2	2	*	*
Like because not developed	*	*	9	11	13	12	5	8
Like the privacy	*	*	4	4	25	12	6	8
Like the peace	*	*	1	3	6	4	5	5
Lack of RV's	*	*	*	1	1	1	*	1
Like, ok to use RV's	*	*	2	*	6	3	1	*
My style	*	1	4	6	7	6	3	4
Like other users	*	*	1	2	1	1	*	2
Like accessibility	*	*	1	2	5	6	*	*
Like as not accessible	*	*	*	*	1	*	*	*
Preserves natural surroundings	*	*	*	2	3	4	6	11
Like as few rules	*	*	*	*	2	*	*	*
Like cleanliness	1	2	*	*	1	*	*	1
Can be used by all	2	5	5	6	3	3	1	*
Don't use, but support	*	*	*	*	*	*	4	4
Feeling of discovery	*	*	*	*	1	2	3	5
Like to hike	*	*	*	*	*	*	6	6
Scenery	*	*	*	2	3	3	6	5
Freedom	*	*	1	1	9	5	2	2
Like to hunt	*	*	*	*	3	1	2	1
It's fun	*	1	5	6	9	6	5	7
Not too expensive	*	*	1	2	3	2	*	*
It's convenient	4	5	7	7	2	4	*	*

1/ Only items with 1 percent or more of the respondents mentioning them are given. Items deleted for this reason were: like rules and regulations, all cannot use, like because safe, can gather natural products, hunting not allowed.

Table 14. Reasons why dispersed road recreationaists dislike highly developed campgrounds, minimally developed campgrounds, dispersed road recreation areas, and roadless, backcountry or wilderness areas [1/]

Reason for Disliking	Highly Developed Campgrounds		Minimally Developed Campgrounds		Dispersed Road Recreation Areas		Roadless, Backcountry or Wilderness	
	Camp	Day	Camp	Day	Camp	Day	Camp	Day
	-percent-							
Too many people	50	38	9	6	*	*	*	*
Too developed	20	21	3	3	*	*	*	*
Not developed enough	*	*	*	*	2	3	*	*
Lack of privacy	6	3	2	*	*	*	*	*
Too noisy	4	5	*	*	*	*	*	*
Too many RV's	1	2	*	*	*	*	*	*
Can't use RV's	*	*	*	*	*	*	2	*
Not my style	6	7	1	*	*	*	1	1
Too expensive	5	5	*	*	*	*	*	*
Dislike other users	1	2	*	*	*	*	*	*
Lack of accessibility	*	*	*	*	*	*	3	3
Destroys natural surroundings	2	4	*	*	*	*	*	*
Too many rules	3	2	*	*	*	*	*	*
Lack of cleanliness	*	1	*	1	*	2	*	*
Can't be used by all	*	*	*	*	*	*	6	7
Don't hike	*	*	*	*	*	*	9	4
Vandalism	*	1	*	*	*	*	*	*
Not fun	1	1	*	*	*	*	*	*

[1/] Only items with 1 percent or more of the respondents metioning them are given. Items deleted for this reason were: too accessible, not enough rules, can be used by all, just not interested, too much wilderness now, not enough wilderness, not safe, no opportunity for hiking, not convenient, lack of freedom.

Minimally developed campgrounds. (4)

People at the three study areas were more favorably inclined towards minimally developed campgrounds than highly developed ones. Many respondents see these settings as offering some of the advantages of more developed areas without the disadvantages. Examples of such advantages include some facilities, convenience, and the fact that these areas are open to all regardless of the equipment they have, their skill at camping, and their physical condition. At the same time, they believe that minimally developed areas are less crowded, more private, more fun, and not as expensive to use as highly developed campgrounds. A minority feel that these areas are also too crowded and prefer more dispersed settings.

Roadless backcountry or Wilderness. (4)

Few people gave reasons for disliking roadless backcountry or Wilderness areas, but those that did felt that these areas were not readily accessible. Recreationists at the three study areas, who liked roadless areas, reported reasons generally similar to those given for dispersed road areas and minimally developed campgrounds, but less frequently. Some additional reasons for liking these settings centered around conservation and esthetic values such as preservation of natural surroundings and scenery, responses consistent with what previous research on Wilderness users has documented (Hendee et al. 1978).

Dispersed road recreation areas (4)

As might be expected from the earlier discussion of setting preferences, only a few people gave reasons for not liking dispersed road recreation areas; about three percent of the respondents felt that these areas were not developed enough and two percent of the day users thought that they were not clean enough. More people gave reasons for liking dispersed road recreation areas than for any one of the other three types. In response to this open-ended question, 25 percent of the campers indicated that they liked dispersed areas because there are not too many people and they are private. About 12 percent of the campers and day users liked this type of recreation site because it is not developed. Other people reported that they value the freedom to do what they want that exists in such areas and that it simply was their style, fun, peaceful, or inexpensive.

Respondents in this study were also asked about specific things which affect their use and enjoyment of dispersed roaded areas. These topics represent positive elements of dispersed motorized recreation which may be negative attributes of other types of recreation opportunities. The conclusion reached after examining these opinions and information presented in earlier sections is that these dispersed recreation settings have attributes which make them different from other types of recreation opportunities. Table 15 shows the opinions about several reasons for liking or disliking dispersed road recreation.

Table 15. Respondents reasons for liking dispersed road recreation (all three areas).

Reason for Liking

A. I participate in dispersed road recreation partly because there are not enough developed campgrounds.

	Disagree	Neutral	Agree	Total	
	- - - - - - - Percent - - - - - - -				
Campers (N=882)	78	9	13	100	X^2=2.29
Day Users (N=1203)	73	16	11	100	p=0.32

B. One reason I prefer dispersed road recreation is because there is no fee charged for this kind of camping.

	Disagree	Neutral	Agree	Total	
	- - - - - - - Percent - - - - - - -				
Campers (N=890)	18	21	61	100	X^2=1.20
Day Users (N=1222)	19	27	54	100	p=0.55

C. One of the values of dispersed road recreation is that it is not regimented and controlled like others kinds of recreation.

	Disagree	Neutral	Agree	Total	
	- - - - - - - Percent - - - - - - -				
Campers (N=893)	6	10	84	100	X^2=1.77
Day Users (N=1218)	7	16	77	100	p=0.41

D. One nice thing about dispersed road recreation is that campers can alter sites to accomodate the needs of their camping party (building new fire ring, setting up tables, changing parking spaces, etc).

	Disagree	Neutral	Agree	Total	
	- - - - - - - Percent - - - - - - -				
Campers (N=893)	8	11	81	100	X^2=7.27
Day Users (N=1222)	16	20	64	100	p=0.026

Table 15 (Cont.) Respondents reasons for liking dispersed road recreation (all three areas)

Reason for Liking

E. I participate in dispersed road recreation to engage in activities not allowed or appropriate in developed recreation areas, e.g., motorbiking, picking flowers, etc.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=885)	33	15	52	100	X^2=1.63
Day Users (N=1213)	39	18	43	100	p=0.44

F. I view the challenge of exploring little-used back roads as an attraction of dispersed road recreation.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=890)	5	8	87	100	X^2=0.53
Day Users (N=1217)	5	11	84	100	p=0.87

G. One value of dispersed road recreation is the chance to camp, picnic or recreate away from people not in my party.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=887)	3	7	90	100	X^2=2.10
Day Users (N=1219)	5	12	83	100	p=0.35

Lack of developed campgrounds. Early in our studies of recreation use along forest roads, some managers were concerned that this type of area was used by campers only because there was an insufficient number of developed campgrounds. The data from this study indicate that that is definitely not the case — over 70 percent of both day users and campers disagree. Our observations during the study indicated that nearby campgrounds were empty or partially full. Obviously, there is something special about these areas which brings recreationists to them.

Lack of fees. Campers and day users do agree (about 60 percent) that lack of fees does influence their preference for dispersed road recreation areas. The unanswered question is, "How much of their recreation behavior is influenced by lack of fees?" If, indeed, dispersed road recreation has some unique appeal for those who participate in it, then we suspect that people might still accept some sort of fee (just as people in developed areas do) even though they may not like it. After all, who would prefer to pay for something when you can get it free.

Lack of regimentation. In contrast to developed recreation sites, (and even to some Wilderness areas) the three dispersed road recreation areas under study have few formal controls over user behavior. Recreationists are generally left on their own to manage their behavior and any conflicts which may arise. A high proportion of both day users and campers (77 and 84 percent) indicate that lack of regimentation is one of the values of this type of recreation (Clackamas day users differed significantly from the other users by indicating less support for this statement). Consequently, if

additional rules and regulations are instituted in such areas, it is possible that user satisfaction might decline if those rules get in the way of goals defined as appropriate by these recreationists (Figure 19).

Able to alter sites. Campsites in the three areas which were studied are characterized by a general lack of facilities or management. Recreationists are often observed moving campfire rings, erecting shelters or temporary outhouses, or moving logs and rocks to facilitate access to the sites. In so doing, they are able to accomodate the site to their own group activities. There was strong agreement that being able to alter sites is an important attribute of dispersed motorized recreation areas. In this case, there was much higher agreement among campers (82 percent) than day users (63 percent). This is logical because day users generally would require fewer site modifications than campers to suit their needs. These data suggests that management actions that would make it less easy for users to alter sites (permanent fire rings for example) would not be greeted by users with enthusiasm.

Significant differences were noted between the areas for both campers and day users. For both populations, support for altering sites was strongest in the Greenwater, followed by Taneum-Manastash and Clackamas. In all cases, though, most users were in agreement that altering sites to meet their needs was a good thing (Figure 20).

Allows certain recreation activities. To what extent do recreationists come to these areas to do things they can't do in a developed recreation area? About half of the campers and day users said this was so. Agreement was strongest for campers in the Greenwater (69 percent) and Taneum (53 percent), areas where motorcycling and jeeping are major activities. Clackamas agreement was only 31 percent. In each case, day user responses were in the same direction, but were not as strong as those of campers. When considering whether certain activities are allowed or not, one must consider if they are allowed at all or only in certain ways. Motorcycles, for example, can be driven through a campground but not around camping sites or on trails. In dispersed road areas, however, there are generally few restrictions if the terrain is suitable for the activity.

Exploring little-used roads. By definition, roads are necessary for vehicle access in dispersed roaded areas. But, roads may also have some intrinsic appeal in themselves. The areas under study have many miles of roads, including high standard paved roads which often turn into unpaved roads ending up as skid roads or informal jeep roads. There was strong agreement by both day users (83 percent) and campers (88 percent) that exploring such roads is an attraction of dispersed road recreation. (For day users, slightly stronger support was found in the Greenwater, followed by the Taneum-Manastash and Clackamas.) Perhaps there is an analogy here between the hiker who explores on foot and the biker, jeeper, or car driver who uses a vehicle on the many miles of available roads in dispersd roaded areas. They may be out for the same thing, but seek it in a different style. And it was by such exploring that many of the respondents found these areas in the first place (Figure 21).

Getting away from others. Intensively used developed campgrounds are characterized by frequent (and often actively sought) interaction between people from different parties (Clark et al. 1971; Hendee & Campbell 1969). The opposite is true in primitive recreation settings -- such contacts are usually not desirable and are infrequent, although intra party socialization appears very important (Hendee et al. 1978; Hendee 1967; Stankey 1973; Burch & Wenger 1967). But what about dispersed motorized areas? Table 15 (item G) and table 16 show how dispersed road recreationists feel about getting away from others in general and at their campsites. Getting away from others is important -- more than 80 percent of both day users and campers agree. And in choosing campsites, about two-thirds want to be completely away from other campers. Less than 5 percent want to be close enough to visit (Figure 22).

Hendee (1967) asked the same question of users in National Forest and National Park campgrounds and Wilderness areas. Although some slight differences were found in that study between users from the two agencies, those results are consistent when compared to findings from the present study. The dispersed motorized area users fall neatly between the car campground users and Wilderness users. That is, they prefer to get away from others more than campground users, but not as much as do Wilderness visitors.

The similarity between campers and day users is striking in this regard. Some people have hypothesized that most day users camp in neighboring developed campgrounds and only use the local dispersed areas as playgrounds during the day. These data suggest this is not the case. When we asked day users where they came from before entering the study area (home, a developed campground, or another dispersd area) 90 percent indicated that they came directly from home (Table 17). It appears that both campers and day users represent a clientele who are drawn to the area by its setting attributes, not because of the unavailability of some other type of area.

Table 16. Preferred Relationship Between Campsites

Relationship Preferred:	Campers (N=873)	Day Users (N=1222)
	- - - - Percent - - - -	
One that is far away from other campers not in my party	66	65
One with a few other campers around that are not in my party	24	24
One where I can visit and talk with campers in other parties	3	4
Don't care	7	7
Total	100	100

$X^2=3.55$
$p=0.32$
N.S.

Table 17. Place of origin for day users before entering the study areas

Origin:	Day Users (N=1106)
	- - - Percent - - -
Residence	90
Developed Site	6
Other Dispersed Site	4
Total	100

Reasons for Visiting the Study Area (3)

Recreationists were asked to explain why they decided to visit the area where they were contacted. A variety of reasons were given (Table 18) and although there were statistically significant differences between overnight and day users most of the same reasons were given by both groups but in differing order. The reasons are of two types -- those related to the area (familiar with area, close to home, and uncrowded) and those related to specific activities (hunting, fishing, biking, camping, sightseeing, collecting firewood, berries, and exploring). Some area differences were also found but these were again a matter of slight reordering. Most of the same reasons appeared somewhere in all the rank orderings.

Preferred Site Characteristics (3)

Much of the information generated as a result of this study addresses the general type of recreation settings preferred by users of the three study areas. During their visit to dispersed road recreation areas campers and many day users spend much of their time at the specific, identifiable dispersed sites described in Table 1. In their response to an open-ended question, campers and day users indicated that they looked for a variety of site characteristics (Table 19) when selecting a campsite.

Recreationists in the sample considered four general types of site features when choosing a campsite: positive site characteristics, negative site characteristics, facilities, and activities. The positive and negative characteristics were mentioned more frequently than either specific facilities (discussed in the next section) or activities. Both campers and day users felt that access to water was the single most important factor when choosing among campsites. Lime (1971) noted a similar preference among

Table 18. Reasons given most often for deciding to visit study area where contacted.[1]

...	Reasons Given by Rank Order			
Rank	Campers (N=898)	(percent)	Day Users (N=1282)	(percent)
1	Familiar with area	42	Sightsee in vehicle	23
2	Hunting	23	Fishing	20
3	Close to home	20	Familiar with area	20
4	Uncrowded	20	Close to home	14
5	Biking	15	Hunting	14
6	Camping	15	Collect firewood	9
7	Sightsee in vehicle	11	Explore area	6
8	Fishing	10	Collect berries	4

[1] Respondents were able to give up to five reasons.

Table 19. When selecting a dispersed road recreation site, what site characteristics are important to you?

Positive Site Characteristics

Overall Rank*		Campers (N=898)	Day Users (N=1282)
		percent	
1	Access to water	65	46
3	Trees	26	17
4	Level site for tent or RV	18	12
5	Scenery	9	10
10	Access to firewood	7	5
12	Shade	5	4
15	Large site	4	3
20	Natural state	2	2
28	Good off-road parking	1	1
31	Grazing available	1	1

Negative Site Characteristics

Overall Rank*		Campers (N=882)	Day Users (N=1282)
		percent	
2	Away from people not in my party	23	20
6	Not trashy campsite	8	9
9	Distant from main road	6	6
14	Not difficult access	4	4
17	Not noisy	2	4
19	Away from hazards to kids	2	2
21	Out of the wind	2	2
26	Not too many trees	1	1
27	Not wet	1	1
28	Not dusty	1	1

Facilities

Overall Rank*		Campers (N=882)	Day Users (N=1282)
		percent	
8	Fire site	7	6
13	Sanitation facilities	3	5
16	Tables	2	2
24	Garbage disposal	1	1
32	Water facilities	1	1

Activities

Overall Rank*		Campers (N=898)	Day Users (N=1282)
		percent	
11	Access to fishing	5	5
18	Good hiking nearby	3	3
22	Close to bike trails	2	1
23	Wildlife viewing	1	1
29	Activities available (general)	1	1
30	Shooting	1	1
33	Access to forest products	1	1

*Overall rank was determined by ranking the means or percentages for campers and day users.

developed campground users in the lake states and Lucas (1964) found that Wilderness campers also preferred sites located adjacent to water. The Code-A-Site data for the three dispersed road recreation areas examined in this study clearly shows that the most popular sites are those located near water and streams (84 percent) (Table 1). Further inspection reveals that the sites where water is unavailable generally are only used during periods of crowding such as during holiday weekends and for special purposes like hunting (Hendee et al. 1976b)(Figure 23).

Other positive site features important to users are the presence of trees on site, a level spot for a tent or ORV, and scenery. Other informal contacts with recreationists indicated that trees were desirable for a variety of reasons including protection from the weather, privacy, and esthetics (Figure 24).

Undesirable site features also play a critical role in site selection. More than 20 percent of the recreationists sampled mentioned that they wanted to camp away from people not in their party. Others wished to avoid "trashy" campsites, those close to main roads, and sites with difficult access (difficulty of course is dependent upon individual definitions).

Specific Facilities Preferred by Users (4)

Table 20 shows respondent preferences for facilities they would like to see provided in dispersed roaded areas. These data show the general unimportance of facilities with the exception of toilets and trash cans. Nearly half of the campers and about one-fourth of the day users indicated "none" -- they like the areas the way they are. The results of this study indicate mixed support for facilities. Several points should be made here.

Table 20. Dispersed road recreation is characterized by a minimal number of campsite facilities. What facilities, if any, do you think should be provided in this dispersed road recreation area?[1]

Kind of Facilities	Campers (N=881)	Day Users (N=1192)	
		- - Percent - -	
None, I like things as they are	42	31	$Z=4.95$ $p \leq 0.001$
Garbage cans	43	48	$Z=-2.25$ $p=0.02$
Toilets	36	44	$Z=-3.60$ $p \leq 0.001$
Centrally located drinking water	19	31	$Z=-5.40$ $p \leq 0.001$
Central sewage disposal	12	16	$Z=-1.80$ $p=0.07$ (N.S.)
Permanent fireplaces at sites	12	22	$Z=-4.50$ $p \leq .001$
More developed campsites	5	7	$Z=-0.90$ $p=0.37$ (N.S.)
Horse corrals (added by respondents)	1	2	$Z=-0.45$ $p=0.65$ (N.S.)
Signs	*	*	

[1] * = indicates less than 1%

1. Day users were more inclined to favor facilities than campers. Perhaps this explains why they don't camp there, i.e., they prefer more comforts and conveniences.

2. Some campers preferred to have more facilities, but camp there anyway. Why? The answer to this question probably is related to the difference between what people prefer and what they find acceptable. Obviously, people who continue to camp in such areas without facilities find their absence acceptable or they would go elsewhere.

3. Following user preferences may change the nature of the opportunities sufficiently to change user patterns. For example, if trash cans, toilets, and other conveniences were installed, the day users who presently do not camp in such areas (lack of such conveniences is unacceptable to them) might then begin camping there, thus competing with current campers who find the lack of facilities acceptable even though some prefer to have more. This was recognized by some campers we contacted who said they would like to have more facilities until they recognized the effects this might have on the use of their favorite area -- more people with different goals might come there. They recognized the reality of the invasion/succession process (Clark et al. 1971, Clark and Stankey 1979b) and concluded they liked things just as they are. These data are a good example of the difficulty inherent in using preferences in making decisions about recreation management (Driver and Bassett 1975). The key in both cases seems to be insuring that the full spectrum of opportunities are available so everyone can choose the type they like best.

RECREATIONISTS' PERCEPTION OF MANAGEMENT PROBLEMS (2)

Recreationists in the three case study areas were asked to indicate how important certain problems are in dispersed recreation areas, and what sort of procedures they preferred for controlling such problems. In general, respondents were not inclined to believe there are many problems in these areas (Table 21 and 22).

Fire Danger (3)

Opinions were split on whether or not there is a great danger of recreationists starting fires (Table 21). Day users were more likely to agree that this is a problem (48 percent) than were campers (35 percent). Apparently campers are more confident in their ability to work with fire in the woods than day users. A study of actual fire occurrences in Washington and Oregon indicates that the risk associated with this type of recreation use is relatively low and that campers often discover, report, and put out fires before agency personnel reach the scene (Hogans 1979).

Crowding (3)

Depending upon who responded, crowding may or may not be a perceived problem. All three areas are characterized as having a few locations in which use is relatively dense, with the overnight areas in the Greenwater the most concentrated. Use is generally spread over a large amount of space in the Taneum and Clackamas.

Table 21. Respondent's Concern about Problems

Fire Danger

a) There is a great danger of recreationists accidentally starting a forest fire in dispersed road recreation areas.

	Disagree	Neutral	Agree	Totals	
	Percent				
Campers (N=884)	48	17	35	100	X^2=47.04
Day Users (N=1224)	34	18	48	100	$p \leq 0.001$ γ=0.25

Crowding

b) At popular dispersed sites <u>in this area</u> some kind of controls will soon be needed to reduce crowding.

	Disagree	Neutral	Agree	Totals	
	Percent				
Campers (N=887)	35	22	43	100	X^2=52.91
Day Users (N=1224)	21	25	54	100	$p \leq 0.001$ γ=0.25

Safety

c) We sometimes feel unsafe when camping or picnicking in dispersed road recreation areas.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=882)	75	11	14	100	X^2=28.22
Day Users (N=1215)	64	17	19	100	$p \leq 0.001$ γ=0.23

d) The Forest Service should alert users to potential hazards in dispersed road recreation areas (such as poisonous snakes, dangerous roads, polluted water, etc.)

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=890)	6	6	88	100	X^2=4.74
Day Users (N=1237)	7	8	85	100	p=0.19 (N.S.)

Table 22. How important do you feel the following problems are in this area?

	Degree of Importance[1]					
	Now a Problem	Becoming a Problem	Not now a Problem	No Opinion	Total	
	Percent					
A. Dust from gravel roads						
Campers (N=882)	4	34	55	7	100	X^2=8.60
Day Users (N=1197)	5	34	51	10	100	p=0.035 γ=⁻0.05
B. Noise from motorbikes						
Campers (N=883)	13	37	45	5	100	X^2=75.77
Day Users (N=1209)	20	44	28	8	100	p≤0.001 γ=⁻0.30
C. Vandalism to personal or public property						
Campers (N=881)	8	32	52	8	100	X^2=186.78
Day Users (N=1207)	19	44	23	14	100	p≤0.001 γ=⁻0.49
D. Theft of equipment						
Campers (N=879)	5	29	57	9	100	X^2=131.68
Day Users (N=1206)	11	37	34	18	100	p≤0.001 γ=⁻0.41
E. Conflicts between recreation users (hikers vs. trailbikers, etc.)						
Campers (N=879)	5	35	49	11	100	X^2=91.00
Day Users (N=1191)	10	43	30	17	100	p≤0.001 γ=⁻0.37
F. Lack of nearby stores, gas stations, and restaurants						
Campers (N=881)	3	14	76	7	100	X^2=11.54
Day Users (N=1204)	3	16	70	11	100	p≤0.009 γ=⁻0.09
G. Lack of directional signs on roads						
Campers (N=876)	5	26	62	7	100	X^2=12.95
Day Users (N=1198)	6	33	54	7	100	p=0.004 γ=⁻0.15

(continued)

Table 22. (Continued)

	Degree of Importance					
	Now a Problem	Becoming a Problem	Not now a Problem	No Opinion	Total	
	Percent					
H. Lack of maps						
Campers (N=873)	8	32	47	13	100	$X^2=3.16$
Day Users (N=1204)	10	31	44	15	100	$p=0.37$ N.S.
I. Danger of accidents with logging traffic						
Campers (N=881)	3	38	48	11	100	$X^2=26.82$
Day Users (N=1201)	6	40	39	15	100	$p\leq 0.001$ $\gamma=-0.18$
J. Litter or garbage around campsites						
Campers (N=887)	5	54	40	1	100	$X^2=95.61$
Day Users (N=1210)	10	63	23	4	100	$p\leq 0.001$ $\gamma=-0.36$

1. Gamma calculated on first three columns only.

Slightly under half of the campers (43 percent) felt that some sort of controls would soon be needed in the area in which they were during the study (Table 21). Campers in the Clackamas area were more likely to agree that some sort of controls are needed followed by the Greenwater and Taneum-Manastash. A large number of both campers and day users were neutral on this issue (22 and 25 percent).

Safety (3)

One of the traditional concerns of recreation managers is for the safety of the forest visitor. The areas studied present a variety of potential hazards: Hotsprings, poisonous snakes, trees, logging traffic, and threats from other users to people and property.

Respondents in the study seemed generally unconcerned about safety hazards (Table 21). The majority do not feel unsafe when camping or picnicking in dispersed roaded areas although Clackamas users tended to agree more than those from the other areas. Furthermore, the majority do not believe that there is a danger of accidents with logging traffic, and even those who do think there is danger see it only as "becoming" more of a problem (38 percent campers, 40 percent day users) rather than something of major concern at this time (less than 10 percent) (Table 22). Whether or not these perceptions are due to users' lack of awareness of problems or to their good fortune in the past is unknown (Figure 25).

Even though recreationists in the three areas seemed generally unconcerned about safety hazards, they did express an overwhelming sentiment that the Forest Service should alert them to potential hazards (Table 21). Eighty-five percent of the day users and 88 percent of the campers were in agreement on this issue. This expression does not contradict their desire for lack of regimentation; it only says that they want to be made aware of potential problems so they can take care of them.

Dust from gravel roads (3)

Most roads in the three areas are not paved and truck and car traffic creates dust at times. Managers often suggest that this is a problem for recreationists. But, about half the sample felt this was not the case. There was less agreement in the Greenwater, probably because of the heavy volume of fast moving logging traffic on the main road, which is close to most of the campsites. These data do confirm that where dust is a problem recreationists will report it as such (Figure 26).

Noise from motorcycles (3)

Although the Clackamas has little motorcycle use, both the Greenwater and Taneum see considerable motorcycle activity. Opinions varied between day users and campers as to whether noise from motorcycles is a problem; day users perceive a much greater impact than do campers. Perhaps that is one of the reasons they do not camp there.

The concept of "variable threshold" or "threshold of disruption" helps us to understand this issue. For people who define motorcycle use as acceptable, or who use an area expecting such use to exist, the level of "acceptable noise" is probably higher than for others whose values and expectations are inconsistent with motorcycle use. Furthermore, the mere presence of this use may be more important and detracting to some users than the noise level per se. Consequently, the level of motorcycle use and resulting "noise" (a personal judgment) is less important than the expectations of the users of the area in question. This issue and procedures for managing recreation impacts, including noise, are discussed in more detail in Clark and Stankey (1979a) and Harrison et al. (1980).

Vandalism and Theft (3)

The distinction between day user perceptions of vandalism and theft problems and those of campers is again evident (Table 22). More Day users perceive vandalism and theft to be a problem than do campers, and more Clackamas campers felt that way than campers in other areas. Perhaps more of the day users work or live in or near the area and are familiar with property theft and damage to logging equipment. In Both groups, more respondents perceived vandalism as a problem than theft. How recreationist's responses compare to managers' are discussed later. Alternative ways for controlling vandalism and other depreciative behaviors are discussed in Christensen and Clark (1979).

Conflicts Between Recreation Users (3)

With the general lack of regulation in the three areas, it might be expected that many conflicts would occur between recreation users. This seems particularly true since there are so many types of activities going on which could result in conflicts. But this does not seem to be the case when user perceptions are examined. Once again, the difference between campers and day users is evident -- day users see conflicts as more of a problem than do campers, perhaps explained by their higher backcountry orientation (Table 13). This suggests, as before, that this may be one of the reasons they do not camp there. Or, perhaps, day users have different sorts of conflicts than do campers.

In general, our observations and these data suggest that dispersed roaded areas are relatively self-regulating. Each type of user tends to find their particular niche, and through this self-selection, minimize conflicts. For example, in one area of the Taneum-Manastash, motorcyclists and horse users are often seen sharing the same meadow -- one group at each end. This is done here and elsewhere without formal regulation or zoning.

Lack of Services and Information (3)

As in most other respects in dispersed roaded areas, recreationists are on their own with regard to bringing food and gas and finding whatever information they need. When we asked whether lack of stores, restaurants, and gas stations was a problem, the overwhelming response was that it is not (Table 22). This supports earlier data suggesting that part of the appeal of such areas is the lack of developments, facilities, and conveniences. If that were not the case, they would probably go some where else (Figure 27).

A similar response, although not quite as strong, was found when we asked about the lack of directional signs. Most said it was not a problem. This may be related to the desire for exploring backcountry roads where directional signs may even be a negative factor for some people. Somewhat stronger support for signs was found in the Clackamas (campers) than in the other areas, perhaps because of relatively less familiarity with the area than the others.

Some concern was expressed, however, when users were asked to comment about whether lack of maps is a problem. This is consistent with other responses -- a significant number of people want more maps which might aid in exploring the areas. Also, maps do not impact the site as signs may in some users' minds (Figure 28).

Danger of accidents with logging traffic (3)

Active logging was taking place in each of the three study areas during the time the study took place. In the Greenwater, a wide logging truck traveled down the main road every few minutes. Results show that most users did not regard logging trucks as a hazard. Approximately five percent considered logging trucks to be a problem, while about one-third thought trucks were becoming a problem. A possible explanation for this attitude is that logging generally did not take place during the weekends when most recreationists were present.

Litter and Garbage (3)

A majority of both day users and campers believe that litter or garbage around campsites is becoming a problem . One reason for this may be that they sometimes have to clean a site up when they first occupy it. The field assistants reported incidents where campers showed them bags of trash they had collected.

Interestingly, an observation study at Greenwater during the same study period found litter and garbage not to be a major problem, although some sites have user-established garbage pits. Nearly 90 percent of the campers packed out their garbage and a few users left garbage bagged or boxed at the fire-ring. During the night, wildlife often would scatter the contents throughout the camp for the next user or fire patrol to pick up. Some Forest Service fire patrol persons occasionally remove litter and garbage from dispersed sites. However, for the most part, these user-established sites were not maintained by the agency during the study period.

Litter does increase at campsites during the summer use period, but it does not seem to be a serious problem. The Litter Incentive System was used at Greenwater, and once again demonstrated that many campers will help clean up their sites when asked to do so (Clark 1976; Muth and Clark 1978). Yet, it might be necessary to educate dispersed users on the adverse impacts caused by litter and garbage. Wilderness sanitation education is extensive (Hendee et al. 1978), and similar strategies such as the Forest Service's "No Trace Camping" policy might be used for dispersed recreationists (Figure 29).

Sanitation (3)

Resource managers, planners and researchers are becoming increasingly concerned with environmental impacts produced by recreationists in dispersed recreation areas (Downing and Moutsinas 1978; Lee et al. 1970; Aukerman and Springer 1976). One problem of specific concern to managers is the impact of human body waste on water quality. Lack of sanitary facilities in dispersed roaded recreation areas may be part of the appeal to the user but may contribute to conditions having the potential for producing impacts that could affect users' health and recreational enjoyment of the area.

The Taneum-Manastash has four minimally developed sites with pit toilets. No facilities are found at dispersed sites along the state highway in the Clackamas, but toilets are available at the many developed campgrounds. No toilet facilities at all are found in the Greenwater.

User-Owned Toilet Facilities (4)

Results of the study suggest that the potential for health and aesthetic impacts from human waste does exist. Thirty-nine percent of campers and 75 percent of the day users had no toilet facilities with them. More than in any other area, users at Greenwater reported that they were self-contained.

Perceived Threats of Human Body Waste (4)

Campers and day users were asked if they perceived the presence of human body waste near campsites as a serious threat to human health, water quality, and recreation enjoyment of the area (Table 23).

Human Health. Opinions are generally mixed, with about equal numbers agreeing and disagreeing about threats of human waste to human health. The large neutral response may be due to a general lack of knowledge about the problem or perhaps reluctance to comment. A social and biological study conducted at Greenwater during the same period focused on the effects of dispersed recreation on water quality (Christensen et al. 1979). Evidence of fecal pollution was intermittent and the isolation of Salmonella from the relatively clean watershed was localized--suggesting that potential health hazards do exist. Providing information to users about such conditions may be important, particularly because they have indicated the desire to be informed of hazards. Some statistically significant differences were found between areas, but these were mostly small and unimportant substantively.

Water Quality. A substantial number of campers (39 percent) and day users (52 percent) agree that human body waste is a threat to water quality.

The water quality study in the Greenwater watershed found deterioration of water quality on weekends, when use was heaviest, as distinguished from weekdays (Varness et al. 1978). The effects on water quality on specific sites, of number of people, self-contained vehicles, and rain were inconclusive (Christensen et al. 1979).

Recreation Enjoyment. The most concern for both day users and campers was on the issue of human waste impacts affecting recreational enjoyment of the area. Almost half of the campers (44 percent) and over half of the day users (56 percent) agreed that it was a serious threat. Human waste was observed at most of the campsites in Greenwater, with the majority found less than 75 feet from the fire-ring. Some campsites had up to 11 different human waste areas, found anywhere from on-site to trails off-site.

Role of Natural Processes (4)

Users were asked whether or not they believe that human body waste disposal is not an important problem because nature quickly takes care of it (Table 24). The high response of users who agreed that nature quickly takes care of it or were neutral may be due to a lack of knowledge of the problem.

Table 23. The presence of human body waste near campsites is a serious threat in this dispersed road recreation area.

Type of Problem	Disagree	Neutral	Agree	Total	
	Percent				
A. Human Health					
Campers (N=872)	47	18	35	100	$X^2=39.23$
Day Users (N=1206)	33	20	47	100	$p\leq 0.001$ $\gamma=0.24$
B. Water Quality					
Campers (N=874)	44	17	39	100	$X^2=58.32$
Day Users (N=1206)	28	20	52	100	$p\leq 0.001$ $\gamma=0.27$
C. Recreation Enjoyment					
Campers (N=878)	42	14	44	100	$X^2=36.98$
Day Users (N=1212)	29	15	56	100	$p\leq 0.001$ $\gamma=0.23$

Table 24. Human body waste disposal is really not an important problem in dispersed road recreation areas because nature quickly takes care of it.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=876)	43	15	42	100	$X^2=13.39$
Day Users (N=1214)	49	16	35	100	$p=0.001$ $\gamma=-0.12$

In fact, little public information is available on decomposition rates and appropriate prescriptions for disposal. Management practices today emphasize education specifying, for instance, digging holes 8-10 inches in diameter and no deeper than 6-8 inches (Hendee et al. 1978). The prescriptions may vary between region and/or agency. In fact, little objective information about the true effects of specific burying practices in different environments is currently available (Sanks and Temple 1975).

Water Drinkability (4)

Many users in this study are not concerned about water being polluted in the areas' streams--they would drink it (Table 25). But, as previousely mentioned, a companion study in the Greenwater found Salmonella and increased fecal coliforms intermittently. Still, according to bacteriological standards established by the State of Washington, the surface waters were found to be AA--acceptable for general recreation esthetic enjoyment (Washington Department of Ecology 1978). Water used for drinking, however, should contain less than 2 total coliforms per 100 milliliters. The evidence of pollution from the relatively clean water of the watershed suggests that potential health hazards exist, and that managers need to prescribe appropriate practices to users for drinking water from the streams. In many places, including backcountry, users are encouraged to boil or treat water prior to drinking (Figure 30).

Presence of Domestic Dogs (3)

In many developed campgrounds and in a growing number of parks and Wilderness areas, dogs are either prohibited or must be physically controlled. No such regulations exist in dispersed roaded areas, and the perception seems to be that these are places where dogs can roam free without impacting people. We found in this study that nearly one-half of the campers (44 percent) and one-third of the day users (31 percent) had one or more dogs with them. And many of the dogs were allowed to run loose (62 percent of camper's dogs and 54 percent of day users). In areas where use is concentrated, the potential does exist for conflicts between parties because of loose dogs. However, our experience in over 5 years in these areas suggests impacts are minor. But there is concern on the part of some managers that, with the presence of human waste around many of the sites, dogs may act as a carrier for diseases.

User Versus Manager Perceptions of Problems (3)

These results indicate that users generally do not perceive many of the problems discussed to be of serious consequence. But this is not the case for managers of these and similar areas. In a companion study, managers were asked to rate the importance of the same problems (Downing and Moutsinas 1978). In almost all cases managers indicated a greater concern than did users (Table 26). These results are discussed in more detail in Downing and Clark (1979).

Table 25. Because it may be polluted, I do not drink the water from the main stream in this area.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=885)	62	11	27	100	$X^2=45.13$
Day Users (N=1236)	48	14	38	100	$p \leq 0.001$ $\gamma=0.27$

Table 26. Managers' and users' perceptions of impact

Impact	Percent of respondents who believe impact is serious, somewhat serious, or becoming more of a problem.	
	Managers	Users
	Percent	
Litter/garbage	92	50
Vandalism	91	37
Danger of Fire	86	40
Theft of Equipment	86	27
Danger of accidents with logging traffic	81	29
Conflicts between recreationists	55	32
Presence of human waste near sites	64	29
Water quality problems from human waste	44	43
Human health problems from human waste	39	40

Such differences have also been found between managers and users of developed campgrounds (Clark et al. 1971; Lucas 1970) and in Wilderness settings (Lucas 1964). Explanations for the differences include the possibility that managers have more information about the real nature and extent of the problems (their magnitude), or that managers and users agree on the magnitude of the problems, but disagree on how important they are (Clark and Stankey 1979a, 1979b). Whatever the reason for the difference, it is important that users be adequately informed about the actual nature of specific problems before any attempt to control them is made.

ATTITUDES ABOUT FOREST MANAGEMENT ACTIVITIES (2)

Recreation along forest roads has been occurring for many years. But, the legitimacy of this type of recreation has been recognized only recently by some managers. In many instances such use has either been ignored or not recognized until a problem occurs. Many managers still believe that the costs associated with it outweigh the benefits (Downing and Clark 1979; Downing and Moutsinas 1978).

We asked respondents in the study to provide some information regarding certain types of forest management activities. Their comments are summarized in this section.

Priority of dispersed road recreation (3)

The data presented so far suggest that dispersed road recreation is different from other types of recreation, with its own clientele. Consequently, we could expect most people would favor it over other types, such as developed campgrounds. When we asked people if dispersed road recreation should be of higher priority than developed campgrounds, less than 20 percent disagreed (Table 27). This study demonstrates that dispersed road-oriented recreation has its own clientele and occupies an important niche along the Recreation Opportunity Spectrum (Clark and Stankey 1979b; Brown et al. 1978).

Road management (3)

Roads and how they are managed play a key role in defining the nature of recreation opportunities. Without roads, the kind of recreation under investigation in this study would not be possible. The majority of National Forest roads that provide recreation opportunities, are an artifact of timber management (Hendee 1974). But, many resource managers do recognize the dual role played by these road systems. Just how these roads should be managed for recreation purposes, however, has not been determined. We asked users of dispersed road areas about a variety of issues related to road management, and their opinions are summarized in Table 28.

Table 27. Dispersed road recreation activities should be of a higher priority than developed campgrounds on National Forest lands

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=883)	13	23	64	100	$X^2=22.11$
Day Users (N=1210)	19	27	54	100	$p \leq 0.001$ $\gamma=-0.19$

Table 28. Attitudes about road management

Road Construction

The opening of more areas for dispersed road recreation is a good reason for building roads into undeveloped roadless lands.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=885)	33	14	53	100	$X^2=42.16$
Day Users (N=1217)	46	15	39	100	$p\leq 0.001$ $\gamma=-0.25$

More roads should be constructed in this area.

	Disagree	Neutral	Agree	Totals	
	Percent				
Campers (N=878)	65	24	11	100	$X^2=1.72$
Day Users (N=1194)	63	24	13	100	$p=0.42$ N.S.

Paving

The paving of a few main forest roads for dispersed recreation would be a good policy.

	Disagree	Neutral	Agree	Totals	
	Percent				
Campers (N=891)	54	15	31	100	$X^2=6.32$
Day Users (N=1228)	48	16	36	100	$p=0.04$ $\gamma=0.09$

(Continued)

Table 28. Attitudes about road management. (CONTINUED)

Road Closures

It is OK to close some roads for management purposes such as...

Type of Road Closure	Disagree	Neutral	Agree	Totals	
	Percent				
A. Road maintenance or repair					
Campers (N=875)	9	10	81	100	X^2=1.13
Day Users (N=1211)	7	10	83	100	p=0.43 N.S.
B. To protect sensitive wildlife					
Campers (N=870)	14	13	73	100	X^2=19.96
Day Users (N=1221)	9	10	81	100	p≤0.001 γ=0.24
C. To improve hunting quality					
Campers (N=871)	28	15	57	100	X^2=8.78
Day Users (N=1212)	26	20	54	100	p=0.01 γ=0.02
D. To reduce fire hazard					
Campers (N=880)	9	11	80	100	X^2=7.76
Day Users (N=1215)	6	9	85	100	p=0.02 γ=0.17
E. To conserve limited road maintenance money					
Campers (N=863)	39	28	33	100	X^2=13.27
Day Users (N=1199) _	32	29	39	100	p=0.001 γ=0.14

Develop roadless areas (4)

Over half the campers and one-third of day users agree that opening of new areas for dispersed road recreation is a good idea. They evidently like the opportunities they are using now and want to see more areas opened up for this type of recreation. This is in sharp contrast to Wilderness users (Hendee et al. 1978).

Need for more roads in study areas (4)

Although people in this study would like to see new areas opened up with roads, they don't want to see more roads in the areas they were in, a feeling most strongly held by campers in the Taneum-Manastash area. As is true for many other things, people tend to prefer stability. This was particularly true in the Taneum-Manastash where for many years road building had been minimal. Since this study was conducted, many new roads have been constructed there. Future studies will determine what effect they have had on dispersed use.

Paving of main roads for recreation (4)

Paved roads are generally easier to travel and less dusty. Consequently, many managers assume that this would be good for recreationists. But most users in this study disagree as they did in a study reported by Lucas in 1964. Only about one-third of the campers and day users think paving is a good idea. Paving was most strongly rejected in the Taneum-Manastash. They may recognize, as suggested by the ROS, that paving changes the nature of opportunity and subsequent recreation use. Paved roads may not be necessary to enhance the recreation experience which users seek in these types of areas.

Road closures (4)

Roads are often closed permanently or temporarily for a variety of purposes. Very often, such closures are violated by recreationists who ignore the closure for one reason or another and go around or through gates. We asked respondents to indicate whether or not they agree that closures were "OK" for road maintenance or repair, to protect wildlife, to improve hunting quality, to reduce fire hazards, and/or to conserve limited maintenance money. These data indicate that, with the exception of hunting and conserving money, closures are OK to a large majority. The greater disagreement on the closure to improve hunting quality may be due to the fact that not everyone hunts and nonhunters may disapprove of hunting per se and, therefore, of closures to improve hunting. Limited budgets are often viewed by the public as a common bureaucratic excuse, and road closures for that purpose found less support as compared to other reasons in this study (Figure 31).

Impact of logging upon recreation (3)

Dispersed recreation in these and other areas has been occurring in conjunction with timber management for many years. Because this kind of recreation has largely been possible only because of timber management programs and the resulting roads, one must question whether people would get more from this type of recreation if roads were built specifically for recreation without other evidence of logging.

Table 29. Impact of Logging Upon Recreation

The impact of logging on the landscape detracts from my enjoyment of dispersed road recreation areas.

	Disagree	Neutral	Agree	Totals	
	Percent				
Campers (N=883)	30	20	50	100	X^2=4.47
Day Users (N=1230)	26	21	53	100	p=0.11 N.S.

This dispersed road recreation area has been too heavily roaded and logged.

	Disagree	Neutral	Agree	Totals	
	Percent				
Campers (N=878)	41	25	34	100	X^2=36.10
Day Users (N=1205)	30	35	35	100	p≤0.001 γ=0.12

Size of clearcuts that are OK in dispersed road recreation areas.

Size of Clearcut	Disagree	Neutral	Agree	Totals	
	Percent				
A. Large Clearcuts OK					
Campers (N=861)	69	18	13	100	X^2=0.0
Day Users (N=1178)	69	18	13	100	p=0.999
B. Small Clearcuts OK					
Campers (N=877)	17	20	63	100	X^2=5.87
Day Users (N=1210)	21	20	59	100	p=0.05 γ=-0.09

Clearcut logging areas should be hidden from roadside view.

	Disagree	Neutral	Agree	Totals	
	Percent				
Campers (N=872)	27	26	47	100	X^2=0.16
Day Users (N=1204)	27	25	48	100	p=0.92 N.S.

Nearly half of both campers and day users agree in general that logging detracts from their enjoyment (Table 29). There is a large proportion of neutral responses with 30 percent of campers and 26 percent of day users disagreeing. That is, half of the respondents are not bothered by logging in general which is in sharp contrast to Wilderness users (Hendee et al. 1968).

When users were asked to indicate whether they thought the area they were in was too heavily logged, about one third of the respondents agreed. Campers in general disagreed more than day users, again, with a large neutral response. With no clearcut answer to this or the preceding question, it appears that, for many people at least, logging is consistent and acceptable for the people presently using the areas. What cannot be determined is how many people like the types of opportunities roaded areas provide but are annoyed by the logging. They would not visit the areas we studied and, consequently, would not be included in the sample.

Clearcut logging is a standard practice in each of the areas. Clearcuts vary in size and location from frequently used campsites. When we asked people to indicate if "large" and "small" clearcuts were OK, we found they strongly reject large clearcuts, while they agree small clearcuts are OK. No attempt was made to determine actual sizes; it was only important here to ascertain if users differentiate between different sizes at all.

Visitors to the three study areas also were asked if clearcut logging areas should be hidden from roadside view. About half of the respondents felt that such areas should be hidden, one-fourth did not think that it was necessary to hide them, and another fourth did not express an opinion. Clackamas campers were most likely to support hiding clearcuts, perhaps due to the highway running through the area.

To gain further insight about this issue, we conducted informal conversations with some users in the Taneum-Manastash area during 1977. Here we attempted to determine how people felt about potential effects on their favorite dispersed campsite because of logging. These discussions indicated that about half the people we contacted felt strongly that these sites were very important to them--there were no equally good sites should theirs be destroyed, and campsites adjacent to "greened-up" clearcut areas were not as good as sites where adjacent trees have not been removed. Most of the people definitely preferred sites that are relatively natural in appearance (no logging evident).

Although these informal contacts may not represent the views of all users, they do help make better sense out of the findings from the survey. Several conclusion are apparent:

1) Recreationists do distinguish between the size of acceptable clearcuts; smaller is better. But many do not reject logging per se.

2) There is some evidence that these users distinguish between the areas in general and sites in particular with regard to acceptable management practices. At the macro (area-wide) level, logging (and clearcuts) are acceptable; at the micro site level, naturalness is important, further indicating that the sites have high recreation values even in heavily logged areas.

These findings are consistent with the Recreation Opportunity Spectrum framework in which the acceptability of other resource use varies by opportunity class (Clark and Stankey 1979b). That is, while people preferring primitive types of recreation settings would not accept logging under any circumstances (Hendee et al. 1968), people preferring dispersed motorized settings will either accept or reject such use depending upon their nature and extent (Figure 32).

Grazing (3)

Of the areas studied, the Taneum-Manastash is the only one where cattle grazing occurs. The practice is fairly widespread, and cattle are often found along roads and at campsites. When users were aksed if grazing is OK, it was interesting to find that Taneum-Manastash users were more likely to agree than those people from other areas, perhaps due to their familiarity with this practice. But we cannot be certain because we do not know if users in the other areas have had any experience in areas with cattle (Table 30). But it is important to note that as for logging many users believe that grazing is an acceptable practice in areas they use for recreation.

Table 30. Grazing by sheep or cattle is OK in dispersed road recreation areas.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=870)	28	16	56	100	$X^2=11.98$
Day Users (N=1208)	27	22	51	100	$p=0.003$
					$\gamma=-0.06$

Motorcycles (3)

Many motorcycles in dispersed recreation areas are not street legal; that is, they may not be licensed, may not have safety equipment (lights, mirrors, etc.), and might be ridden by underage riders. We asked respondents whether cycles should be legal on forest roads and on trails. Results varied by area. In general, respondents in all areas were more likely to agree to street-legal requirements on roads rather than on trails and skid roads (Table 31). Greatest agreement was in the Clackamas area where motorcycles of any kind are less common than in other areas. In the other two areas, distinct differences are obvious between campers and day users. Campers (who more frequently have motorcycles) generally reject street legal requirements more often than day users (Figure 33).

Fire Prevention Programs (3)

Respondents were asked to give their preference for different types of fire prevention procedures. These data are summarized in Table 32. It should be kept in mind when reviewing these data that preferences are not necessarily related to effectiveness in the prevention of recreation-caused fires.

For the most part, users tend to be supportive of current practices, with no significant differences between day users and campers on these issues. Both groups generally favor less restrictive procedures, with the exception that both groups agree that fires should be prohibited when danger is high. In high risk times we observed that use goes down anyway which is a behavioral measure of user's concern for fire prevention. Yet, closing the area or requiring permits are viewed as far less acceptable procedures as might be expected based on earlier data showing the importance of regimenting influences in these areas.

Table 31. All motorcycles should be "street legal"; that is, cycles should meet all state safety requirements and all drivers should be licensed.

Location	Disagree	Neutral	Agree	Totals	
	Percent				
On forest roads					
Campers (N=881)	39	9	52	100	$X^2=86.60$
Day Users (N=1225)	21	10	69	100	$p=0.001$ $\gamma=0.35$
On trails and ski roads					
Campers (N=876)	52	13	35	100	$X^2=88.41$
Day Users (N=1216)	33	12	55	100	$p=0.001$ $\gamma=0.35$

Table 32. User preferences for different types of fire prevention procedures.

Fire Prevention Procedure	Campers (N=898)	Day Users (N=1281)	
	Percent		
Carry shovel, axe, and bucket	90	87	$Z=1.35$ $p=0.18$
Prohibit fires when danger is high	79	88	$Z=-4.08$ $p\leq 0.001$
Fire prevention signs at camp	82	87	$Z=-2.26$ $p=0.02$
Fire patrolmen along roads reminding people	50	50	$Z=0$ $p=1.00$
Close area when danger is high	36	47	$Z=-4.97$ $p\leq 0.001$
Require fire permits	11	22	$Z=-4.95$ $p\leq 0.001$

Agency Presence (3)

Ranger patrol (4)

Recreationists in dispersed roaded areas are often contacted by patrols, primarily to warn them of the fire danger. When we asked users to tell us if the amount of patrols should be changed, less than 5% said "decrease" (Table 33). A substantial number said "don't know," with the majority indicating patrols should be kept at the same level. The only problem with these data are that the people in this study were contacted far more frequently by patrols than is standard because our research staff operated as patrolmen and contacted camping parties several times. A possible implication is that, if the people in the study mean that patrols should be kept at the same level as during the study (where everyone was contacted at least once), that really means they should be increased. In any case, these data imply support for contacts with agency patrols. This and other studies indicate that Forest Service patrols enjoy a positive image on the part of the public (Stankey 1973; Hendee et al. 1976b; Muth and Clark 1978) (Figure 34).

Entry Stations (4)

Only one of the areas, the Greenwater, had a formal entry station during the study. There, users were stopped and reminded to be careful with fire. When we asked users if there should be entry stations, there was significantly more disagreement in the Taneum-Manastash and Clackamas--areas with no entry station. There was a relatively high proportion of neutral responses in all areas. Lack of experience with entry stations may explain why some people reject them. It would appear that with justifiable reasons communicated effectively to area users, most people would not object to entry stations.

Table 33. Ranger patrol of this dispersed road recreation area should be[1]...

	Increased	Remain the same	Decreased	Don't know	Total	
	Percent					
Campers (N=862)	15	59	3	23	100	X^2=81.0
Day Users (N=1178)	18	41	2	39	100	p≤0.001
						γ=⁻0.26

1 Gamma calculated on first three columns only.

Table 34. There should be an entry station for users to check in and out of this area.

	Disagree	Neutral	Agree	Total	
	Percent				
Campers (N=892)	49	20	31	100	X^2=25.4
Day Users (N=1228)	39	27	34	100	p≤0.001
					γ=0.13

Such locations could serve to provide information to users about the area as well as potential hazards such as fire and logging trucks. Personnel at such points could also keep records about the visitors which would aid in area management.

SUMMARY (1)

Strictly speaking, the sample represents that population which camped overnight or entered one of the study areas for a day use visit during the summer and fall of 1976. The sample does not represent all dispersed motorized recreationists in Washington and Oregon, nor can it be applied to all of the areas used for dispersed road recreation within this region. The study does, however, shed light upon the characteristics, preferences, and opinions of users of three diverse areas used for dispersed recreation which are similar to other areas in the Pacific Northwest. The overall consistency between responses in the three areas does tend to indicate that some common elements exist in the types of areas studied.

Our informal observations and contacts with area users since 1977 do not indicate that there have been any major changes since the study in the attitudes or preferences of visitors to these areas. We suspect that because of increasing energy costs, and increased resource uses in several of the areas, that some of the patterns of use may have changed. Research plans are to follow the development of recreational use and resource activities over a long period including repeating the user survey in future years. The present data provide a baseline to evaluate changes which may occur.

The following generalizations can be made about the results from our investigations of recreational use in the three areas under study. Although there is some danger of creating inaccurate stereotypes by presenting typical patterns, this summary is provided with the assumption that interested readers will study details of the findings to become sensitive to the diversity inherent in the populations studied.

1. Although we have called this type of recreation "dispersed" recreation, most of the use is generally concentrated in key locations along valley-bottom roads and streams. Use of other (and generally higher) areas is more diffuse with activities occurring mostly during the day. Exceptions occur during hunting season and periods of intensive use. And in some cases, people who want to get away from the relatively "crowded" areas select sites in more out-of-the-way locations.

2. Two apparent user groups exist in the areas studied: campers and day users. Although they share many attitudes, there are some significant differences in preferences and resulting use patterns.

3. Group camping is the rule. Sites in the three areas studied often can accomodate relatively large parties as compared to formal campgrounds. Intra-party socialization is an important part of dispersed motorized recreation.

4. Not only do the users in the sample prefer the types of areas we found them in, but they most often use them as well, compared to developed and primitive backcountry recreation settings. Lack of other more desireable opportunities was not a reason given for visiting these locations as has been suggested. Furthermore, the sample indicated that while their use of other types of settings would remain about the same in the future, they would increase their use of dispersed roaded areas.

5. Several major reasons were given for why people in the survey like dispersed roaded areas: privacy from other people not in their party, lack of development, freedom, and the fact that dispersed motorized camping is "their style" were often cited. In contrast, they indicated not liking developed recreation settings because there are too many people there and the sites are too developed.

Other major attractions to the areas were: viewing wildlife, getting away from others, ability to alter the sites to accomodate their needs, lack of regimentation and control, exploring little used roads, lack of fees, and to engage in activities not allowed or appropriate elsewhere.

6. Most of the respondents learned about the areas through informal means (family or friends), and by exploring the roads. Very few indicated agency information sources.

7. A high proportion are very familiar with the areas: they have been coming to the study site for an average of more than seven years and most have favorite sites to which they usually return. Visitors are from nearby towns or metropolitan areas; few people travel long distances (more than 2 or 3 hours) to reach the areas.

8. Respondents are specific in site selection. Water, trees, level area, and a private site far away from people not in their party were often mentioned.

9. While at the sites, visitors engage in a variety of activities. In fact, all of the 39 activities listed had participants in each of the three areas. Each area did have some activities which differentiated it from the other areas, but variety was the rule everywhere.

10. With a few exceptions, additional facilities and conveniences were generally not desired in any of the areas. Many users preferred to have some garbage cans, toilets, or water supplies, but other data in the survey and conversations with users seem to indicate that the lack of facilities is acceptable. Some people expressed their concern that such "improvements" might attract other people, thereby increasing the competition for available sites.

11. In general, visitors to the three areas do not perceive that many problems exist. In contrast to concerns expressed by managers in a companion study (Downing and Clark 1979; Downing and Moutsinas 1978), little concern was expressed about problems such as litter and garbage, fires, noise, vandalism, and theft. But respondents did indicate that the Forest Service should alert them to any hazards which might be present.

12. Respondents were split in their opinions about potential threats of human waste to their health and enjoyment. Lack of knowledge about potential hazards in drinking water from nearby streams and appropriate waste disposal methods was evident.

13. Opinions were also divided about the desireability of building new roads which would increase opportunities for dispersed motorized recreation. They indicated that opening areas for such recreation is a good reason for building new roads but they did not want more roads in the area which they were in at the time.

14. Paving of roads did not get strong support. Road access is obviously important, but paving, evidently represents an unnecessary and perhaps detracting change for many people using these types of settings.

15. Road closures were strongly supported for maintenance, wildlife protection, and reducing fire hazard. But much less support was expressed for closing roads to improve hunting quality or to conserve limited maintenance money.

16. All but the most restrictive fire prevention procedures found support in the survey. While signs (both at camps and along roads), fire patrols stopping at camps, prohibiting fires when danger is high, and requiring axe, bucket, and shovel were acceptable to most users, closing areas and managing entry stations received a split opinion. Few respondents said requiring a campfire permit was an acceptable practice.

17. In general, the survey results, as well as our observations for more than 7 years indicate that, at least for most of these users, other resource management practices are compatible with recreation. In fact, almost all of the use studied in these areas is dependent upon logging and associated roads. In contrast to the polarization in views found in studies of Wilderness users, visitors to these dispersed roaded areas did not object to logging (and grazing in one of the areas where it is common) per se. They indicated that the size of clearcuts, for example, and their location relative to roads and campsites was important, but they do not reject logging and clearcuts in their area as might Wilderness users.

18. Finally, as has been documented in other studies of recreationists, the respondents in this survey expressed strong support for agency presence, ranger patrols specifically. The image created by the seasonal personnel who largely fill such positions is highly favorable, a situation which can facilitate management of such areas in the future.

CONCLUSIONS (1)

Nationally, there are many opportunities for the type of recreation found in these three areas. For example, the Forest Service and Bureau of Land Management both have millions of acres of wildlands open to motorized vehicles, with a network of roads extending several hundred thousand miles. As part of the Forest Service recreation program, dispersed forms of outdoor recreation such as those described in this paper will be emphasized in the future (USDA Forest Service 1977).

The three areas we studied are different in terms of the recreation opportunities they provide in comparison to other opportunities along the Recreation Opportunity Spectrum (ROS). In contrast to developed, intensively used campgrounds found at the modern-urban end of the ROS (Clark and Stankey 1979b) these dispersed, roaded areas feature more rustic settings where formal facilities are uncommon, recreation use is less concentrated, and far fewer regimenting influences exist. As compared to Wilderness and roadless backcountry on the other end of the ROS, these areas are accessible by motorized vehicles and allow a wide variety of both motorized and non-motorized recreation activities along the road system.

Visitors to the three areas seem to be different as measured by modern and/or primitive user standards. The results of this study clearly demonstrate that they choose to go to such areas because of the attractions provided there. As is suggested by the ROS framework, these users predominantly like the roaded access, yet most find unpaved roads acceptable; they enjoy the relatively low level of use and like sites isolated from others; they appreciate the self regulating nature of these areas where they are free to do their own thing and alter campsites to suit their objectives; and while generally accepting logging (and clearcuts) to some degree, they seek naturalness and want favorite sites protected.

Although each of the three areas is different in terms of physical characteristics which increase the occurrence of certain activities, there also is a great deal of similarity. These areas are representative of a type of setting somewhere in the middle of the ROS; yet diversity and variety in terms of physical attributes and resulting activities is found both between the areas as well as within any one area. The goal of management should be to enhance this variety and diversity in ways consistent with ROS principles. It is not important that each area like those studied, or roads within a particular area be managed in exactly the same fashion; it is only necessary that management recognize that there is a range of appropriate conditions acceptable to users in dispersed motorized areas. These areas are valuable because of a special combination and range of manageable conditions which easily can be enhanced or just as easily destroyed if explicit recreation management goals are not clearly stated in advance.

The recreation use investigated in this study was only possible because of the road systems developed for other resource programs, primarily logging. The results indicate that resource uses such as timber are generally consistent with the values and goals of these users. These users do not reject such practices as might people who prefer the more primitive styles of outdoor recreation. Consequently, it seems important that planners and managers examine multiple use programs to see where current practices might be modified to maximize the benefits of dispersed motorized recreation while minimizing conflicts. Road design and timber sale layout might be altered in such ways to increase the ability of users of these areas to find the kind of setting most to their liking. This research seems to indicate that multiple use of the same lands for recreation and other resource programs is not only practical in these areas, but desired by a segment of the public as well.

Because National Forest direction is to place increased emphasis on dispersed forms of outdoor recreation, it is important that recreation sites used frequently, or those which have special qualities, deserve consideration in land use planning. It seems particularly important that all functional areas of resource management (i.e. fire, timber management, engineering, recreation, etc.) utilize such information in their programs so that recreation sites established by users are not lost inadvertently. The fact that so many people have been coming to these areas frequently for many years indicates that these locations have some special appeal for them. Future management programs must consider the value recreationists place on these attractions and the non-economic as well as economic costs associated with altering those settings.

Of primary concern to managers and recreationists alike should be the identification and protection of attractive sites for dispersed motorized recreation. The campsites seem to be particularly important and are often destroyed unknowingly as part of other resource activities. By identifying where sites are, and determining which have frequent use and/or special appeal, managers are better able to insure their use in the future. But it is clear that areas like those under study will always be in a constant state of change. This seems particularly true in forest areas with mixed land ownership and with multiple use objectives. Undoubtedly some prime locations will be lost as resource programs evolve. For example, Code-A-Site inventories conducted in the Greenwater area in 1975 and then again in 1978

indicate that 57 percent of the original sites no longer existed--37 percent were destroyed by management and 17 percent through flooding. With knowledge about what are the important recreation opportunities in an area, such changes can be made as a part of a planned effort rather than inadvertently because of oversight. And with information about what users define as being of value to them, planners are better able to identify new locations in the inventory and planning process before presently roadless areas are opened up for motorized entry.

Results of this study clearly document the self regulating nature of recreation in these areas. These users have found areas to their liking and, by exploring similar places, may find additional appealing sites. The role of visitor information services seems important in facilitating this process so that they are able to find their brand of outdoor recreation. At present, little information exists through formal channels about the nature of the recreation opportunities on lands open to the public. It would seem helpful to map not only existing transportaton systems (roads and trails), as is currently done by several agencies on maps available to the public, but also to identify the type of recreation settings they can expect (modern-urban to primitive in ROS terminology). Such delineation is presently being done as part of recreation opportunity inventory by the USDA Forest Service and this information, if available to the public, would aid them in making decisions about where to go to suit their needs and meet their expectations. Any public information system should also include knowledge about what is acceptable behavior in these areas. The "no trace camping" ethic sponsored by the USDA Forest Service in primitive areas, for example, might be expanded to dispersed motorized areas as well.

The role of the Ranger seems particularly important in providing such information. Results of this study show the wide acceptance of contacts by agency personnel. Other studies on litter control (Clark 1976, Muth and Clark 1978) also show a generally positive acceptance of uniformed personnel. Our observations indicate that such contacts seem to work best when information is transmitted about how a problem can be solved rather than an admonishment to "be careful." For example, a major concern in the areas studied was fire. And most Ranger patrols were in the areas primarily to warn users about fire dangers. In some instances sites were fireproofed; that is, the Ranger moved any hazardous material and built an appropriate firering in the absence of recreationists. Often, however, when users arrived they would alter the site (a major appeal of these areas) and move the firering to a place in keeping with their goals. But the new location might not be appropriate from a fire prevention perspective and the change is frustrating to the Ranger. Consequently, we recommend that whenever possible Rangers show the campers, children in particular, how to build a safe firering. With this new knowledge they are more likely to alter sites in the future in appropriate ways.

What the future holds for dispersed motorized recreation is unclear. Energy shortages and gasoline price increases make it difficult to predict how much of this use will be desired or possible in the future. Users in this study indicate that, while they intend to do more of this type of recreation in the future, they will make trips to nearby areas rather than travel long distances. Public lands near metropolitan areas like the three we studied, therefore, might see increases in the future. And, we might see a shift

away from large vehicles and trailers to more economical and fuel-efficient RV's. If the recreation opportunities studied are as unique and appealing as this study seems to indicate, this use is likely to continue and even increase into the future. Long term studies will be necessary to document any changes which might occur.

As a final point, it must be emphasized that whether managers intend to or not, or are even conscious of it, practices they follow on forest lands open to public use will affect the nature of dispersed recreation opportunities and user enjoyment and experiences. Many options exist which will either hinder or facilitate recreation activities. And many of these practices would require very little investment of time or money. The key is to make goals and objectives explicit prior to on-the-ground action. This will require that recreation management objectives be integrated and coordinated with other multiple use objectives prior to resource inventory.

The results of this study document the nature of opportunities desired by visitors to roaded, yet relatively primitive areas. Increased sensitivity to the types of expectations and desires they have will go a long way towards facilitating their type of outdoor recreation.

The location, design, and maintenance of roads is a key element in providing a diversity of opportunities. Locating appropriately designed roads in desireable locations will allow users to create campsites to accomodate their needs. Ignoring these desireable qualities (either purposely or inadvertently) will eliminate many options for the public. Identification of potential opportunities prior to road construction may increase our ability to manage for recreation as well as other resource uses in an optimal fashion.

And when upgrading present road systems, or re-entering an area for additional timber harvest, mining, etc. managers should be aware of existing sites and uses. Although it may be necessary to destroy some sites to accomodate other objectives, such a decision should be made with full awareness of its effect on the forest visitor. Where possible prime sites should be buffered from roads and clearcuts to maintain their isolation. This will require that some sort of inventory of existing sites be available prior to the changes which are envisioned.

In short, there seems to be a great potential for increasing the amount and quality of dispersed recreation opportunities in roaded forests. Only the sensitivity of managers and their creativity in finding ways to accomodate forest visitors will maximize such options. As presently roadless areas are opened for resource development, or roaded areas are re-entered, there is the opportunity to provide recreation values in conjunction with primary extractive uses at apparently little cost in terms of budget and time. This would seem to be particularly important in forests near communities so that the public can have energy efficient access to a range of desireable opportunities. The alternative may lead to less than optimum conditions for both the manager and visitor and result in displacement of use from one area to another and the unnecessary loss of prime recreation habitat.

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